Telepresence on the cheap?

Businesses can reap 80% to 90% of the benefits of telepresence via upgrades to existing videoconference gear at a fraction of what they'd spend on brand-new telepresence systems. **Page 10.**

Apple aims iPhone at corporate users

A host of new features, such as Microsoft Exchange and Cisco IPSec VPN support, are aimed at making the iPhone more attractive to corporate users. **Page 20.**

NETWORKWORLD

The leader in network knowledge ■ www.networkworld.com March 10, 2008 ■ Volume 25, Number 10

SPECIAL FOCUS:

Choosing an apps security approach

Payment Card Industry security rules push for greater data protection. **Page 12.**

Microsoft directory, identity management services

Microsoft is working on a series of upgrades to its directory and identity technologies in the coming months with the goal of creating a service-based identity platform. **Page 21.**

NETWORKWORLD LIVE

Network World's 2008 IT Roadmap Conference & Expo tour stops in Chicago on April 2 before heading to Boston.

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Big shots targeting VMware

BY JON BRODKIN

VMware is synonymous with x86 server virtualization. It's the unquestioned leader with an 80% marketshare for its hypervisor.

But cracks are starting to appear in the armor. Competitive products are cropping up all over the place; Microsoft is preparing an assault with the upcoming release of Hyper-V.

Uneasy lies the head that wears a crown. Just ask Bill Shakespeare — or Bill Belichick.

"VMware is the champion right now, but it's sort of like the [New England] Patriots," says Laura DiDio, a Yankee Group analyst. "When you go 18-0, you've got a bull's-eye on your back. Everyone's looking to take you down."

So if VMware is the Patriots, which vendor is the Giants?

The obvious choice is Microsoft. But it could also be Citrix Systems — or Sun, Oracle, Virtual Iron Software, Novell or Red Hat. VMware's biggest vulnerability is pricing, says DiDio, who just published a report on the virtualization price war.

Less expensive is not always better, but VMware's product retails for about $3,000 per socket, while the other virtualization

See VMware, page 18

Cisco betting big on new edge router line

BY JIM DUFFY

Cisco's 2008 extreme makeover continued last week with the introduction of an all-in-one edge-router line designed to handle everything from deep-packet inspection to VoIP traffic — and is aimed squarely at one of Juniper Networks' sweet spots.

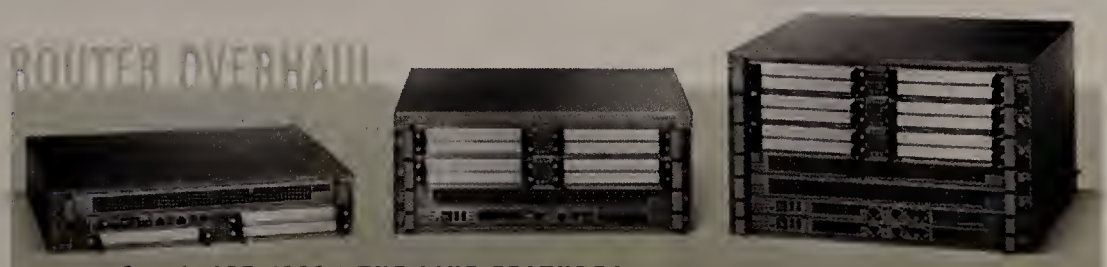
The Aggregation Services Router (ASR) 1000 series, which Cisco spent five years and $250 million developing, will handle applications traditionally supported by the company's aging 7200, 7300 and 10000 series routers, as well as the firewall and QoS duties typically owned by separate devices. Observers expect the ASR 1000 boxes, which have a new operating system and are powered by a superfast processor called QuantumFlow, will replace the older routers eventually.

The ASR 1000 represents the second overhaul of a Cisco product line announced this year. In January, the company unveiled the Nexus 7000, a next-generation switch with built-in security.

Some observers expect Cisco also to recast its campus-switch portfolio, anchored by the years-old Catalyst 6500 and 4500 lines, to support bandwidth-intensive applications such as video and Web 2.0 programs.

FactSet, a provider of financial information and analytic applications for worldwide investors, sees a major consolidation

See Cisco, page 47



Cisco's ASR 1000 line is intended to serve customers' WAN-edge needs for the next 10 years.

THE LINE FEATURES:

- Three models with three, eight and 12 shared port adapter slots.
- Embedded services processor that supports deep-packet inspection, QoS and other services.
- Performance of 4 million to 8 million packets per second.
- New version of IOS based on Linux kernel.

CLEAR CHOICE TEST: VoIP MANAGEMENT

Tools boast new diagnostic and repair features

NETWORKWORLD CLEAR CHOICE

Touchstone's WinEyeQ edges ClearSight Analyzer in test of five products

VoIP monitoring tools have matured quite a bit in the past year or so. Products we looked at in past testing could alert you when a problem arose, but that was about it. Today's products can tell you what the problem is and how to fix it. **Page 36.**

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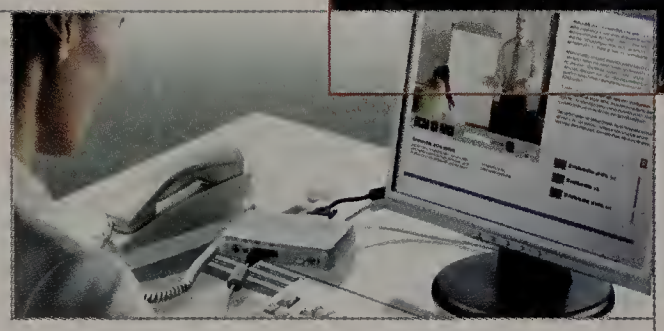

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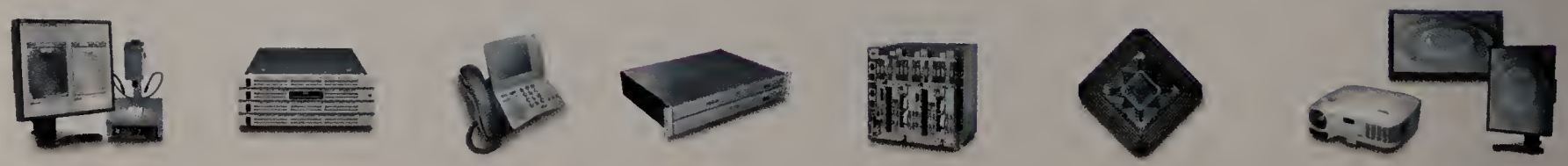

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5 Catch up on the latest online stories, blogs, newsletters and videos.

COOLTOOLS

■ Netgear's 802.11n wireless gaming kit. **See Cool Tools, page 24.**

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GOODBADUGLY

A billion reasons to love AT&T

AT&T last week said it will spend $1 billion in 2008 to expand its IP networks for large businesses, driven by an "explosive surge" in data, voice and video traffic. After a tough previous week for telecom during which big layoffs and poor financials were announced, the stock prices for telecom equipment companies jumped on the AT&T spending news.

If you can't trust antivirus software . . .

If your computer gets infected with a Trojan called the "MonaRonaDona virus," be careful with what you use to wipe it off, says antimalware software provider Kaspersky Lab. MonaRonaDona is part of an elaborate scam to sell fake antivirus software, researchers say.

SNMP security loophole?

System administrators have long been wary of the security implications of Simple Network Management Protocol (SNMP), but a recent experiment by "ethical hacking" group GNUCitizen has shown that many SNMP-enabled devices are left unguarded and may be prone to giving away sensitive information. In a random scan of 2.5 million IP addresses via SNMP, the group found that many devices gave away names, models and in some cases the patch state of the operating system.

CLEAR CHOICE TEST: VOIP MANAGEMENT

NETWORKWORLD CLEAR CHOICE

Tools have new diagnostic and repair features

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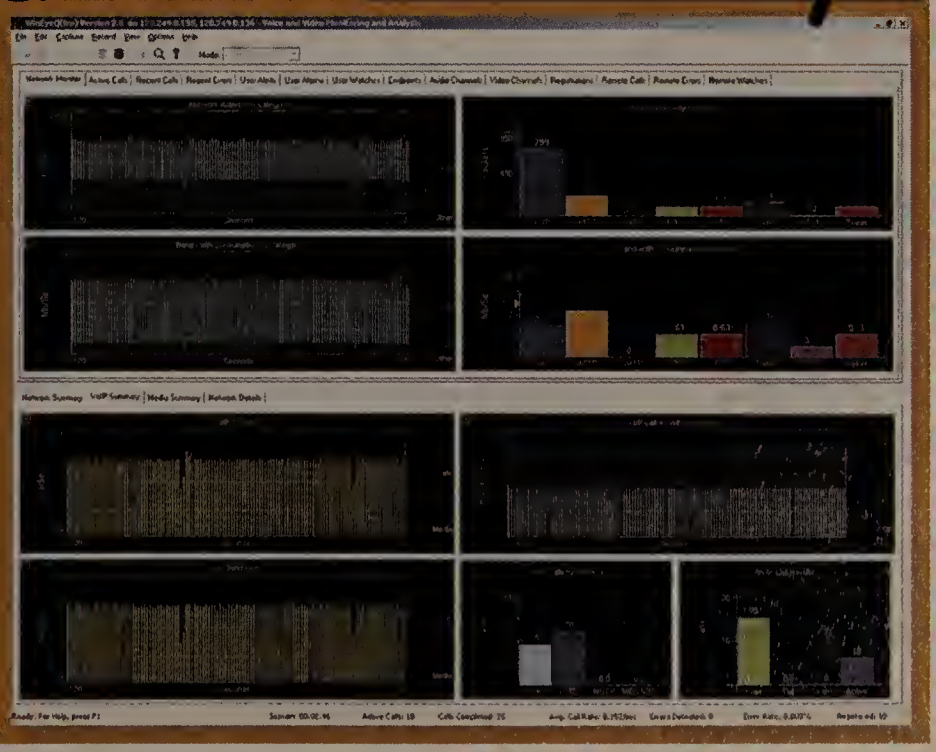

Touchstone's WinEyeQ provides a detailed display showing traffic sorted by protocol, packets and bandwidth.

New wireless exploits

Re: Wireless security foiled by new exploits (www.nwdocfinder.com/3027):

Many SOHO networks use WPA with [a pre-shared key], but few have the skills to install higher-level authentication with RADIUS servers and the like. A big problem still is the lack of 802.1X in the general enterprise network. Many times you can go to a corporate site and plug an Ethernet cable into an open port and get a connection. Not very good port access-control at the basic level.

Paul Lopez

Discuss at www.nwdocfinder.com/3028

Protecting against exam cheating

Re: A solution to the braindump problem — Part II (www.nwdocfinder.com/3029):

My conclusion is the problem is not "braindumping" at all but real-time, relevant, random certificate verification. The logic is that exam cramming for increased short-term memory retention can be quickly identified weeks or months later very simply by random retesting. Get the employer involved in random testing. I don't mean a three-year term cycle but random unannounced testing. This is similar to random drug testing; the expectation of random testing reduces drug use.

Provide a program so HR or IT department managers can partner with certifying agencies and have access to certificate award databases and testing materials to allow an immediate pre-hire and probation-period tests. If the certificate comes from ACMEquickCert.com, the pre-hire test should be pulled from ABCcert buster.com or someone else. There is really not much of a chance to prepare for every possible test source and test method, so this can be step two to resolve the problem.

The big problem is that about 30% of the IT tech field would choke at their next job interview because their short-term test-prep memories will fail them in the face of random testing. They will need to know the material or face a reduced salary agreement.

I am not suggesting someone get fired for scoring less on a random test, but a percentage of their wages should be in the balance.

Bruce Carver

Discuss at www.nwdocfinder.com/3029

Hatred

Re: My top eight IT hates (www.nwdocfinder.com/3030):

I would add technology companies that refuse to sell directly to customers but have clueless resellers who don't understand the products. Just last month, I called a manufacturer and got referred to a reseller, who had me call a contact at the manufacturer to figure out what product configuration I needed. This very knowledgeable guy couldn't give me a price, though, and bounced me back to reseller guy so I could play phone-tag for three days. All manufacturers who use this model should regularly have a "secret shopper" call the reseller to see just how their products are being represented.

> "About 30% of the IT tech field would choke at their next job interview because their short-term test-prep memories will fail them in the face of random testing."

Jeff Helm

Discuss at www.nwdocfinder.com/3031

How Philly Wi-Fi could work

Re: Wi-Fi fizzles in Philadelphia (www.nwdocfinder.com/3032):

I still think it is good concept, if a little underbaked. However, as I said then and still maintain, access is just one-third of the triangle. The city also needs to provide content and systems.

Content is relatively easy these days; what is missing is a set of templates and instruction to give tourists and citizens a common look-and-feel and strong experience-oriented organization.

Systems is another matter. Free (or inexpensive) Wi-Fi is useless without a computer. Philadelphia needs to involve its students in collecting and reconditioning computers that have reached end-of-life in the city government and schools. These systems (and training) could be provided to citizens at a sliding cost, to encourage use of the network and to get people online for city services instead of inline.

Christopher Baum

Discuss at www.nwdocfinder.com/3033

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification

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BLOGOSPHERE

■ **State-sponsored URL filtering.** Richard Stiennon writes in his Stiennon on Security blog, "I am in the midst of a four-city tour of Australia speaking on cyber warfare. There is much discussion of Australia's plan to require ISPs to filter particularly offensive content. For the most part this is being touted as a child protection action on several levels, one by blocking access to child pornography and two, by limiting the things Australian children will be exposed to. This policy is in marked contrast with the approach of the US which is hands-off. The idea being that parents are responsible for limiting what their children are exposed to and it is no business of the state to be the arbiter of good and bad content. . . . Filtering, as practiced by China and soon Australia is a boon to network security vendors. But it is a shame that it comes at the expense of reduced freedom of information." **www.nwdocfinder.com/3034**

■ **Trend: Application delivery systems plunge into performance management.** Peter Sevcik and Rebecca Wetzel write in their new App Performance View blog, "Taking advantage of the measurement they must do to improve application performance, increasing numbers of Application Delivery System (ADS) vendors are adding performance management to their bag of tricks. This new trend will find them butting up against the likes of NetScout, NetQoS, Compuware, OPNET and Quest Software. In some cases this could save the trouble and money of buying and managing multiple solutions. ADSs modify traffic flows by controlling which packets get to move (traffic shaping, QoS, etc.) or accelerating the application above the packet layer (compression, caching, etc.)."
www.nwdocfinder.com/3035

■ **Microsoft trying to out-Google Google.** Microsoft Subnet blogger Mitchell Ashley writes, "It seems like almost every day that Google makes some seemingly small, incremental move to gradually turn up the heat on Microsoft. The frog, Microsoft in this analogy, though knows Google is sticking it to them, but they're just too big to make the leap out of the pot in one jump. Google just made available Google Calendar Sync, a Windows app that lets you sync your primary Outlook calendar with Google Calendar. Microsoft is trying to out-Google Google by quietly executing on their own strategy, giving all of us the appearance that Software plus Services is just a lame attempt at rebranding a slow and lumbering Microsoft."
www.nwdocfinder.com/3036

INTERVIEWS, THE COOLEST TOOLS AND MORE **IT VIDEO**

IDG NEWS WIRE:

Intel shows off Atom prototypes

Intel shows off the Atom processor and prototype Atom devices at Cebit. The devices should be on sale in the middle of the year, Intel said.

www.nwdocfinder.com/3042

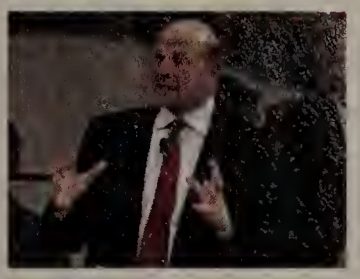
IDG NEWS WIRE:

Caroline, the self-driving car

Caroline is a self-driving car created by members of five institutes of the Braunshweig University of Technology in Germany. They turned a Volkswagen into a high-tech machine that's capable of driving on its own.

www.nwdocfinder.com/3043

IDG NEWS WIRE:



Ballmer talks about Green IT, Yahoo

Microsoft CEO Steve Ballmer covered a range of topics during the company's Cebit press conference. He touched on green IT, emphasizing that the company's recent software announcement has a thread of green.

www.nwdocfinder.com/3044

BEST OF NW'S NEWSLETTERS

Tantra Nightclub: Where everybody knows your identity

Identity management: Usually when Calgary, Alberta, is mentioned in this newsletter it's something about Pamela Dingle, doyenne of the Pamela Project, but not this time. This time I want to tell you about a bar. Calgary's Tantra Nightclub thought it had hit on a way to keep the violence down by scanning patrons' driver's licenses as they entered. According to a story in the *Calgary Sun*, this was Tantra's way of contributing to Alberta's "Cage Your Rage" campaign and bouncer training program. But the city's Information and Privacy Commissioner recently ruled that this was a privacy violation and could no longer be allowed. This was applauded by many, including Microsoft's identity guru, Kim Cameron. However, I'm going to side with the night club. Upfront, though, let me say that the objection I have is to this being done without the patron's knowledge and consent. Tantra should tell them what will happen, then leave it up to the individual to decide if they want to go in (and provide their identity data) or not.
www.nwdocfinder.com/3038

Wireless: In a domino-like manner, starting with Verizon Wireless, the major U.S. mobile network operators recently created all-you-can-eat voice plans for about 100 bucks a month. Given that many businesses now strike mobile contracts for pooled minutes of usage enterprise-wide, how beneficial will these plans actually be? "I like having options," the telecom manager of a nationwide manufacturing company told me. "And it's a good plan if you only have 20 users and they each talk 2,000 minutes per month." However, this particular company has aggregated its 500 enterprisewide users onto a Verizon Wireless pooled-minutes plan that translates into the least-expensive minimum plan per user, per month. Doing the math, he says, the newly announced flat rates come out to "about $60 more per month, per user than I pay now."
www.nwdocfinder.com/3039

Microsoft buys U-Prove technology

Microsoft hopes to beef up online privacy with the acquisition of U-Prove technology, the company announced last week. U-Prove was developed by Stefan Brands at Credentica as technology that lets Internet users disclose only the minimum amount of personal information when conducting electronic transactions as a way to reduce the likelihood of privacy violations. U-Prove also employs cryptography to prevent systems from pulling together information about users from various sources. Microsoft did not disclose a purchase price for the technology, which it plans to integrate into Windows Communication Foundation and CardSpace. Brands has joined Microsoft's Identity and Access Group along with his colleagues from Credentica, Greg Thompson and Christian Paquin. **www.nwdocfinder.com/3051**

'Mebroot' proves to be a tough rootkit to crack. A rootkit uncovered in December is proving to be a real headache to detect, according to security company F-Secure. Dubbed Mebroot, the rootkit infects the master boot record, the first sector of a PC's hard drive that the computer looks to before loading the operating system. Because it loads before anything else, Mebroot is nearly invisible to security software. "You can't execute any earlier than that," said Mikko Hypponen, F-Secure's chief research officer. Since December, Hypponen said they've seen alpha and beta versions of the Mebroot rootkit but believe it has been RTMed, the term usually used for a legitimate piece of software that's entered production after testing. Once a machine is infected, the hacker controlling the rootkit has control over it, opening the potential for a variety of other attacks.
www.nwdocfinder.com/3052

Census Bureau: Companies spend $251 billion on network and computer tech. U.S. businesses spent $251 billion on information and communication technology equipment and computer software in 2006, an increase of a little more than 6% from 2005, the U.S. Census Bureau reported last week. The rapid pace of technological advances in computers, telephones, fax machines and electro-medical apparatus and network gear has resulted in these assets being replaced quicker than other types of equipment, the bureau said in its latest Information and Communication Technology Survey. Many companies write off the full cost of these assets during the year of purchase rather than depreciating the cost over two or more years, the study found.
www.nwdocfinder.com/3053

Open source robot does household tasks. Imagine a robot that hands you a beer and then cleans your kitchen and living room. That's what start-up Willow Garage is busy developing. Willow Garage is an open source project that wants as much outside participation as possible. One of its immediate goals is to build 10 robots and make them available to university researchers as a common platform that can be tinkered with and improved. Willow Garage also will supply "an open source code base integrated from the best open source robotics software available," said President and CEO Steve Cousins last week.
www.nwdocfinder.com/3054

Patent reform tops BSA's legislative priorities. The Business Software Alliance wants the U.S. Congress to pass a patent reform bill and executives at the trade group say they're optimistic that the legislation will soon move forward in the Senate. Patent reform heads up a list of five legislative priorities the trade group released last Thursday. The BSA wants Congress to approve the Patent Reform Act, which the House of Representatives passed in September, but the legislation has been stalled in the Senate because of objections from inventors, pharmaceutical companies and some small tech firms. Among the BSA's other legislative priorities is legislation that protects consumers' data.
www.nwdocfinder.com/3055

Spotlight NEWS FROM CEBIT

SAP, Intel partner on new appliance. SAP and Intel are teaming to sell a Xeon-based appliance geared to run SAP's ERP software, the companies announced at last week's Cebit show in Hanover, Germany. The appliances will be loaded with SAP's Business All-in-One software and its MaxDB database, along with SUSE Enterprise Linux from Novell, and are aimed at midsize manufacturing, trade and service industries. That architecture appears to already have some favor among SAP's users. The company released figures stating that 700 midsize companies are running its SAP applications on Linux, and within that group, 35% are using MaxDB.
www.nwdocfinder.com/3048

Development model predicts chance of software flaws. Researchers from a German university have developed a model to predict programming errors in applications. The model analyzes a program's version history and bug reports and examines the source code to find out how modules within the software interact with each other. It also looks at how the developers communicated with one another, examining their e-mail, instant message conversations and forum discussions. Researchers then use statistical analysis to build the predication model, which can indicate, for example, that a section of code has a 70% probability of containing a defect. The university's work has gained the attention of software giants SAP and Microsoft.
www.nwdocfinder.com/3049

Small scanner spots bogus money. A U.S. company has introduced a small counterfeit bill detector designed for retail use that can sniff out even the "super dollar," a convincing yet bogus $100 bill allegedly produced in North Korea. In less than a second, the D500 Super Dollar Authenticator from AccuBanker USA can look at several aspects of a bill to confirm its legitimacy, including the distribution of magnetic ink on the paper. The magnetic map is stored in the D500, as well as three other maps containing ultraviolet, infrared and other measurements taken from legitimate bills, said Carlos-Andres Gonzalez, a vice president of sales for AccuBanker, at Cebit.
www.nwdocfinder.com/6050

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Could corp. customers bail out Sprint?

BY BRAD REED

Last month, new Sprint CEO Dan Hesse told *USA Today* that his company was considering offering flat-rate pricing for unlimited voice calling as a way to shake up the wireless status quo. Just more than a week later, Verizon, AT&T and T-Mobile all beat Sprint out of the gate, announcing unlimited wireless calling plans starting at $99.99 per month for both consumers and businesses.

Sprint has since tried to steal back some of the thunder from its competitors by announcing an unlimited "everything" plan that would give customers unlimited voice, data and multimedia services for $99.99 per month. While this plan seems to be a better bargain than the Verizon and AT&T plans — which only offer unlimited voice services for a monthly $99.99 charge — it is unlikely to make the big splash that Hesse had initially hoped for, because Sprint's three biggest rivals came out with their own flat-rate wireless plans more than a week before. As Hesse pointed out in his *USA Today* interview, he'd prefer that his company be "on the offensive rather than the defensive" and that if Sprint can't differentiate itself from its competitors then it "can't win."

Hesse's desire to give the wireless market a jolt is understandable, because Sprint has been stuck in a rut since its 2005 merger with Nextel. Over the past couple of years, Sprint has faced problems ranging from continued difficulties in integrating former Nextel users into the Sprint network, a subpar marketing campaign and investor nervousness over the future of its $5 billion WiMAX investment to a shrinking subscriber base. Last week brought more bad news from the carrier, as it reported a $29.5 billion fourth-quarter loss that was caused by a write-down from the 2005 Nextel merger and an ever-shrinking customer base. Additionally, rumors have been swirling that Qwest will soon switch its wireless service provider from Sprint to Verizon to increase the quality of its cell phone offerings.

Can enterprise services lift Sprint?

But even with all this, a Sprint comeback isn't completely out of the realm of possibility. Some analysts think that there are enough unmet demands in the wireless telecom market for Sprint to carve out a niche for itself and improve its standing as a brand. Forrester analyst Lisa Pierce, for instance, thinks that Sprint could "cause significant nightmares for competitors" by refocusing its commitment to enterprise customers and billing itself as a backup carrier for business sites that use incumbent carrier T1 services.

Pierce acknowledges that this sounds counterintuitive, because being a backup provider typically "doesn't generate a lot of revenue," but she says it could offer a foot in the door for businesses that are "frustrated with [incumbent local exchange carriers] and anxious for alternatives." The best way for Sprint to accomplish this would be to use Xohm, which serves as Sprint's planned WiMAX service, as a primary fixed-line access service that could support both voice and data.

"For this to make financial sense for Sprint, a company would have to commit to putting minutes and megabytes over Xohm, and move from a secondary to primary access arrangement," she says, although she adds that this plan could lead to a shortage of WiMAX spectrum on a local basis, because consumer mobile Xohm applications would have to contend for spectrum with the business users.

Nemertes Research analyst Mike Jude also thinks Sprint could rework how it delivers services to enterprise customers by expanding the scope of wireless business services beyond the basic voice and limited data offerings currently provided for mobile workers.

"If I were running Sprint, I would get together with a company like IBM Lotus or Google," he says. "And I would put together a killer collaboration application suite armed with some good business productivity tools, and I would package it with a reasonable access plan aimed at small and medium business users."

Jude says that a collaboration package between Sprint and a company that has a strong reputation for designing business applications could be "a real winner if it were designed to run on broadband wireless and were offered as a service."

Think small for big results

Others think that Sprint is already moving in the right direction to retake portions of the consumer market, and that it's only a matter of time before its upcoming slate of services starts to have an impact. Gartner analyst Tole Hart says that Sprint could cut its "flat-rate everything" rate down by offering unlimited in-house coverage for families who purchase femtocells, which are devices that use short-range cell phone frequencies to route wireless calls through a home broadband connection. Last year, Sprint rolled out its Airave devices in Denver and Indianapolis, marking the first time a major carrier has sold femtocells in metropolitan markets.

Hart says the advantages for Sprint are obvious, because femtocells route calls through IP, thus freeing up more space on Sprint's wireless network. With more capacity on its network, Hart notes, Sprint could offer some reasonably priced flat-rate family wireless plans that would appeal to families who struggle with frequent overage charges.

"People would basically like that because they wouldn't have to worry about teenagers going over on minutes," Hart says. "That's something that could definitely have traction in the market."

Sprint also could get a boost if it is successful in its new negotiations with Clearwire to create a nationwide WiMAX network. Although the two companies had broken off their plans to build a jointly operated network late last year, they've recently begun talking again, and Intel is rumored to be investing more than $2 billion in the venture. ■

InBrief

Gates: No longer world's richest according to *Forbes*

Microsoft Chairman Bill Gates fell to third place on *Forbes*' 2008 list of the world's richest people after 13 years at No. 1, due largely to Microsoft's bid for Yahoo. The magazine blamed Gates' decline to the slide in Microsoft shares from the day before the company announced a $44.6 billion offer to buy Yahoo, Jan. 31, to the day Forbes calculated stock prices into its rich list valuations, Feb. 11. Had Microsoft shares not declined so much, Gates would have been in a close race with investing mogul Warren Buffett for the top spot on the list, Forbes said. Buffett took over as the world's richest man this year with an estimated $62 billion fortune, while Mexican communications industry leader Carlos Slim Helu came in second with $60 billion. Gates' fortune was valued at $58 billion.

House panel kills controversial copyright provision

A U.S. House of Representatives subcommittee has stripped out a provision in a copyright enforcement bill that would have increased fines by 10 times or more for compilation CDs containing pirated music. Critics of the original version of the Prioritizing Resources and Organization for Intellectual Property Act had complained that one provision would assess fines for each separate copyright work on a compilation work such as a CD, meaning the fines for a 10-song compilation CD would range from $7,500 to $1.5 million, instead of the current $750 to $150,000. While the controversial provision has been stripped, the PRO IP Act would still increase other penalties for copyright infringement, including a doubling of damages in counterfeiting cases, with the maximum penalty for a counterfeiting offense rising to $2 million.

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Using telepresence on a budget

Adding telepresence features doesn't mean ripping out videoconference gear

BY TIM GREENE

Businesses can reap 80% to 90% of the benefits of telepresence via upgrades to existing videoconference gear at a fraction of what they'd spend on brand-new telepresence systems, according to an analyst firm specializing in unified communications.

"You don't have to spend $200,000 to get good image quality. You don't have to spend $170,000 to get a panoramic view. You can do this much less expensively," says Ira Weinstein, a partner at Wainhouse Research.

Instead, companies already using videoconference equipment can selectively upgrade it to boost the illusion that participants are all in the same room, which is one of the main goals of telepresence.

For example, audio, not video, is the most important factor in whether a videoconference discussion is satisfying, Weinstein says, so a business could pick the most used videoconference rooms and add $2,000 worth of microphones in tabletops and speakers in ceilings to improve the sound.

"The moment you do that you will have a massive improvement in the experience, yet you spent only a couple of thousand dollars," he says. "You didn't have to go to telepresence to improve your audio. With a little money you can make a big difference."

Similarly, businesses can improve video by installing bigger screens to boost the size of the images of participants. "You spend $7,000 on the screen and installation and suddenly instead of half-life-size images of people you can get full-size," Weinstein says. "That's a lot less than $150,000 or $200,000, yet you've made a significant improvement."

But there are those that want the ideal telepresence experience. Anthony Knight, a service delivery manager for Pfeizer Ltd. in the Netherlands, says his firm is buying into telepresence even though it already has 55 videoconference rooms.

"We get the room done, put in video equipment, and then there's no money for wall coverings and furniture. Telepresence includes the money to get the room right," Knight says.

That demonstrates a need for telepresence, but something less can be adequate. "There is a place for turnkey telepresence offerings from Cisco, Polycom, Tandberg, HP," Weinstein says. "But you don't need the telepresence level of communications in every conference room. You can apply those concepts to your videoconferencing deployments and enjoy a better experience."

Tweaking lighting, camera angles, décor and bandwidth can make a significant difference relatively inexpensively, he says.

For instance, telepresence conference rooms built by some vendors call for identical furniture, wall coverings and even room size. But the illusion can be maintained without buying identical tables and chairs and shipping them around to all sites or using lighting consultants to perfect the ambience, he says. Available chairs and conference tables at each site can serve just as well.

Corporations will find they want to preserve their videoconferencing gear for other reasons, Weinstein says.

Videoconferencing generally uses one screen per site that can be divided into many segments to accommodate images from many other sites. Rooms can vary from auditoriums with hundreds of attendees to private offices with one participant, so images of individuals can vary greatly in size.

By contrast, telepresence seeks a consistent experience at all sites by using multiple video screens (usually three) to create a panoramic view of participants at other locations and to generate life-size images of them, he says.

"Videoconferencing favors flexibility so you don't get consistency," Weinstein says. "Telepresence favors consistency."

Because of camera and seating restrictions, participation in teleconferences is limited to six or eight people per site. Accomplishing this requires high-bandwidth connections — usually 3M or 4Mbps — and a single vendor's equipment to all sites, which limits what sites can meet with what other sites. Interoperability in telepresence is all but nonexistent.

Telepresence also offers a wide view of remote rooms, which are lighted, arranged, decorated and furnished to give the illusion that they are an extension of the room each participant is actually sitting in.

With videoconferencing, bandwidth requirements can be a few hundred kilobytes, and technologies can include dedicated links, IP, even dial-up ISDN, so access is flexible. Standards are well established so each site can generally connect with most other sites regardless of which vendor's equipment is used at each location.

Businesses that want telepresence but have a tight budget don't have the option of downgrading elements of a telepresence package, Weinstein notes. "You can't tell Polycom I want this for $180,000 less so give me cheaper codecs or cheaper screens," he says.

But companies with an investment in videoconferencing facilities have options to upgrade the pieces that will bring about the most improvement and approach the level of telepresence, he says.

"Your job as a conferencing manager is to find that balance where you're spending what you need to spend yet you're making a big difference," he says. ■

Telepresence vs. videoconferencing

Conferences providing voice, video and data screens can be accomplished with videoconferencing and newer, more realistic and more expensive telepresence, but there are other important differences.

Telepresence

Pros

- Full-size images of participants.
- High-definition sound and video.
- Consistent sense of being in the same room and looking each other in the eye.

Cons

- Expensive.
- Requires high bandwidth.
- Requires rigidly specified rooms, decor, furniture and lighting.
- Supports limited participants.

Videoconferencing

Pros

- Costs less.
- Has flexibility via well established interoperability standards.
- Accommodates low-bandwidth links.
- Accommodates high numbers of participants.

Cons

- Screen size and image quality vary.
- Sound quality can be spotty.
- No sense of being in the same room with remote participants.

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Choosing an apps security approach

Payment industry security rules push for greater data protection

BY ELLEN MESSMER

Application security is getting a new push as rules governing the Payment Card Industry mandate that many businesses undergo a software code review or make use of a Web application firewall starting later this summer.

"Application security is high on everybody's radar," says Brad Friedman, CIO at Burlington Coat Factory, which like other businesses that handle customer payment cards is obligated to comply with PCI security guidelines (www.nwdocfinder.com/3021). For Friedman, who says his company has locked down PCs and point-of-sale devices in its 400 stores, the concern remains how to avoid the kind of credit-card data-breach fiasco that TJX had last year.

But the question is: Which of these soon-to-be PCI-required approaches to take? And even if you're not required to go with one of these approaches, does either of them really do the trick?

Code analysis pros and cons

There's a wide range of tools and services (www.nwdocfinder.com/3022) that help automate code analysis for the purpose of finding security flaws in applications, including those from Fortify Software, Klocwork and Veracode. And there are application-penetration testing tools, such as the Core Security Technologies' Core Impact software, which uses an agent-based approach.

Many security experts point out, however, that automated code analysis has its limits, especially when it concerns finding flaws in the underlying business logic of an application.

"Source-code analysis won't find all security vulnerabilities," acknowledges Brian Chess, chief scientist at Fortify, which makes tools for static-code analysis and real-time analysis of applications. "It will find a lot of vulnerabilities that can be exploited through buffer overflows, cross-site scripting and SQL injection. But source-code analysis can't tell you about business logic flaws. It can't find design flaws."

Others agree. "Closed source or open source, it comes down to the programmer and their psychology," says Joe Stewart, senior security researcher at Atlanta-based SecureWorks. "Code inspection will find common mistakes, such as buffer overflows. But finding errors in logic is much harder."

Business logic flaws often are made in the design of an application's authentication process, Stewart says. "Suppose it checks one letter at a time — it gives attackers a clue," he says. "Or a logic bug may involve giving people access to something they shouldn't have. Programmers may skip over the critical checks so they can do it faster."

Stewart adds that another common error in writing code for the Web is putting the public backup of a file in a public directory that can be read on the Web, allowing an attacker to download PHP code to read the mistakes in the code.

Web application firewall pros and cons

Web application firewalls (also called application-layer firewalls) are generally regarded as an appliance, server plug-in or filter that can apply a set of security rules to the back and forth of HTTP traffic to identify and block certain types of attacks.

Reading, Pa.-based Sovereign Bank, with 800 retail locations plus Internet banking, uses the WebDefend Web application firewall from Breach Security. Web Security Manager Aron Weaver says the product is useful for learning about the defects in an application while it's running, such as spotting where a SQL injection or cross-site scripting attack might occur due to a programming error.

"Web application firewalls will block the malicious traffic, and it gives you time to correct the code," Weaver says.

Sovereign Bank also uses its Web application firewall to watch outbound traffic to detect suspicious activity involving customer-account numbers. In addition, the bank deploys periodic scanning from SPI Dynamics to look for vulnerabilities. But Weaver says his impression is it only catches a small portion of the application problems because these techniques don't find the mistakes in business logic.

"For instance, it might be where two systems are handing off data to each other, and the way the authentication flows from one to another fails in the application," Weaver says. These sorts of business-logic mistakes are dug out through a lot of manual testing and code review, he adds.

"Web application firewalls are good for finding technical vulnerabilities," says Danny Allen, director of security research at IBM Rational, which makes the Rational AppScan tool for analyzing software holes. "But the other kind of problem is in the business layer in the logic. This needs to be addressed in collaboration between the security team and the development team. It's about education in building applications," he says.

Ed Adams, CEO at Security Innovations, a consultancy specializing in application security risk assessment, also sees poor coding practices as the central problem.

"The bigger problem is the insecure way that applications are coded today," he says. "Web application firewalls catch a lot of the low-hanging fruit, like a SQL-injection attack. But they don't catch business-logic attacks."

Some of the most egregious business-logic

See Security, page 13

Keeping an eye on things

A look at frequency of security reviews conducted, by type, according to a Deloitte survey of 169 financial institutions.

	Quarterly	Semi-Annually	Annually	Ad hoc	Never
VULNERABILITY SCANNING	38%	11%	18%	26%	7%
PENETRATION TESTING (INTERNALLY)	18%	12%	26%	28%	16%
PENETRATION TESTING (EXTERNALLY)	16%	16%	34%	24%	10%
APPLICATION SECURITY CODE REVIEW	7%	1%	8%	61%	23%

Tech leaders scramble for IT talent

BY DENISE DUBIE

BOSTON — Massachusetts tech leaders are working to get ahead of the "quiet crisis" IT management will face in a few years when scores of IT staff retire.

"We have more than 2,000 IT professionals in the commonwealth, and 30% are going to retire within five years. The changing workforce is dramatic, both in demographics and skill sets," said Anne Margulies, assistant secretary and CIO for the commonwealth of Massachusetts. "The people we have, all have to be retrained. This is the quiet crisis in IT management," she added.

Margulies told attendees last week at research firm Input's State Executive Breakfast in Boston that, because of her previous work experience at the Massachusetts Institute of Technology and Harvard University, she also realizes the number of computer science graduates is dwindling. The imminent retirement of baby-boomer IT workers and students' loss of interest in IT have tech leaders at public and private organizations looking for talent now to avoid being resource constrained in the future.

"Even at MIT, enrollment in computer science programs is steadily declining, due to outsourcing concerns and the dot-com bust. We have fewer computer scientists in our schools, and the supply is going to be down when the demand will be way up in a few years," she said.

WORKERS WANTED

Close to 60% of 749 C-level executives reported to the IT Governance Institute that an insufficient number of IT staff poses a continuing problem in their organization.

Margulies included recruiting new IT talent among her top five priorities as Massachusetts' technology leader. The commonwealth has partnered with the University of Massachusetts Boston to develop courses and internship programs to make sure existing government IT staff can be trained in the latest skills, and to develop a pipeline of new talent graduating from the university into commonwealth positions.

Margulies said as part of its updated training program, the commonwealth has developed courses in project management, Java development, and business analysis and design methodologies at UMass Boston. And by partnering with the university on the internship program, the commonwealth will hire 20 of its computer-science graduates this year. "UMass Boston is eager to increase enrollment and create a pipeline of students coming out of UMass and into the commonwealth," she said.

Despite Massachusetts' and many other states' having to cut costs, Margulies reported that commonwealth leaders will increase its investment in IT. The IT Bond Bill currently before the Massachusetts legislature calls for a $450 million budget for modernizing existing systems and investing in new technologies, as well as for another $78 million for a second data center in western Massachusetts to augment the current Chelsea location.

While it can get "pretty gloomy in staff meetings," Margulies said IT is one of the "few budget areas with increases." ■

AT&T plans $1 billion network investment

BY GRANT GROSS, IDG NEWS SERVICE

AT&T will spend $1 billion in 2008 to expand its IP networks for large businesses, driven by an "explosive surge" in data, voice and video traffic, the company said last week.

AT&T's 2008 investment in its enterprise networks will be a 33% increase from 2007 and more than double its investment in 2006, the company said.

Among AT&T's 2008 network expansions:

- Added under-the-sea fiber-optic cable capacity to Japan and other parts of Asia, as well as to the Caribbean. AT&T plans to invest in multiple under-the-sea cable systems to Southeast Asia and Australia, and import existing cable servicing India and the Middle East.
- New multi-protocol label switching (MPLS) routers in Europe, Asia and the United States, with new or additional MPLS-based IP network access nodes in Paris, Russia, Kuwait, India, Japan and other countries.
- Enhanced Ethernet network capabilities, including the rollout of a global virtual private LAN product, initially in the United States, Europe and the Asia-Pacific region. AT&T plans to make these services available in 2008 in 14 cities: Frankfurt, London, Brussels, Paris, Amsterdam, Stockholm, Dublin/Cork, Milan, Madrid and Zurich in Europe; and Hong Kong, Sydney, Singapore, and Tokyo in the Asia-Pacific region. The company expects to have an Ethernet footprint in 39 countries by year-end.
- The addition of DSL as an access alternative to China, Finland, Norway and Saudi Arabia. By year-end, AT&T plans to have DSL available as an access alternative in 21 countries.

"Companies worldwide are responding to the exploding need to deliver voice, data and video in real time to their end-users, no matter where they are, no matter what the device," Ron Spears, group president for AT&T Global Business Services, said in a statement. "It is vital that we continue to invest in those geographies and services to meet this demand so our customers can connect their operations, partners and suppliers."

In the fourth quarter of 2007, AT&T's Global Business Services unit saw hosting revenues grow by 19%, enterprise IP-data services by nearly 21%, and VPN revenues by 31%. ■

Security

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errors that Adams has recently observed have been associated with software cookies, the small data parcels sent from a server to a Web browser for purposes of authentication, tracking or maintaining specific information about the user.

"At one e-commerce site, we found we could just open it, see the session ID and change the price," Adams says. "This is 'cookie poisoning,' and it's very common. The problem is once the cookie was issued by the server, they weren't revalidating it. The shipping was calculated the same way."

But nobody thinks Web application firewalls are a waste of time and money.

Paul Asadoorian, senior network security engineer at Oshean, a consortium providing network and security services for Rhode Island universities, healthcare organizations and the state government, points out that ModSecurity, the open source Web application firewall plug-in for the Apache Web server, is very popular at universities to prevent cross-site scripting and other attacks.

"The IT staff for servers and networks at universities often don't have control over the application-development process," Asadoorian says. "ModSecurity strips out characters to prevent attacks."

In the final analysis, most say, automated code analysis and Web application firewalls both play a valuable role and can be complementary approaches to securing applications. The real challenge is building applications right from the start.

"Our mind-set needs to change," Asadoorian says. ""The code needs to be sanitized much better than it is when you're writing the application and then running it." ■

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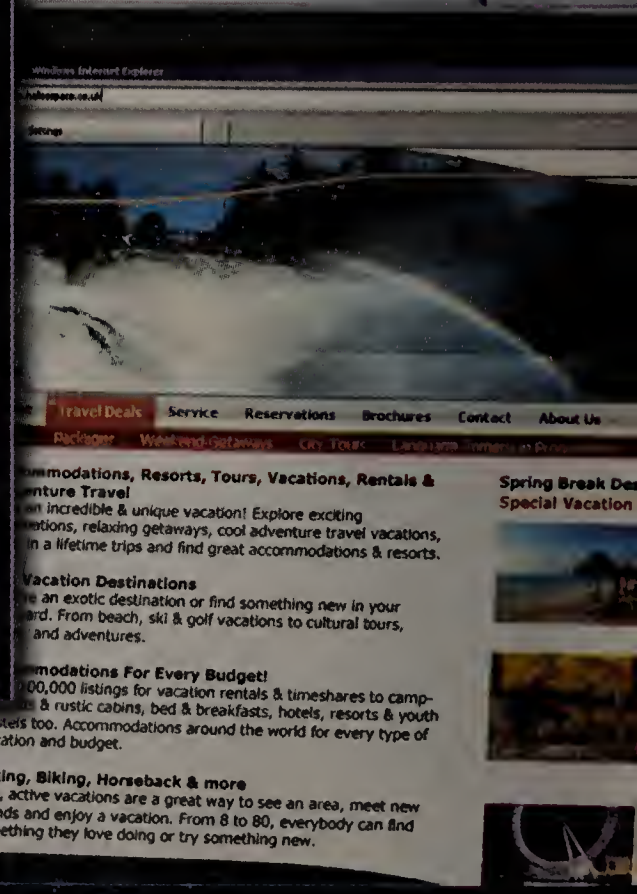

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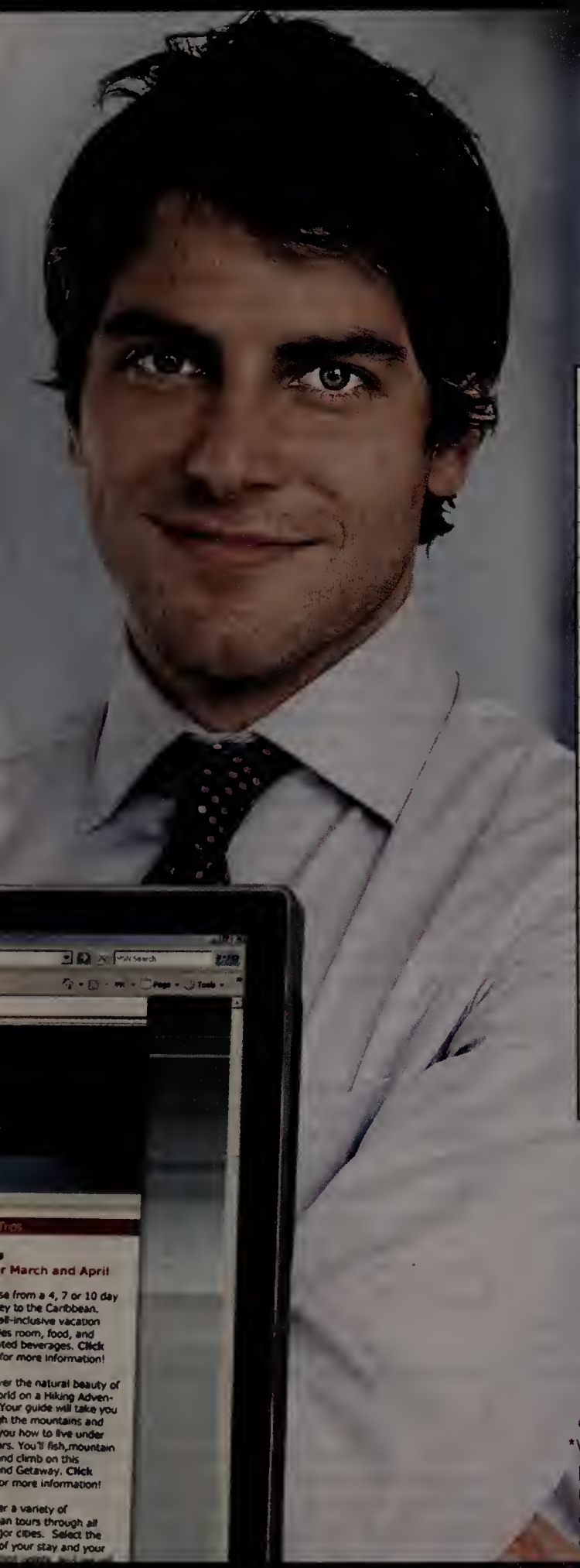

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VMware
continued from page 1

vendors typically charge $700 to $800, according to DiDio. Microsoft's Hyper-V will cost a paltry $28 as a stand-alone product or come free as an add-on to Windows Server 2008. The EMC-controlled VMware hasn't indicated any possibility of lowering prices, but it does offer one free product called the VMware Server, intended to lure new customers.

A Yankee Group survey last year had 55% of server-virtualization customers planning to use VMware, 29% opting for Microsoft, 14% undecided and the rest buying from one of several other vendors.

Microsoft is thought to have the most promising shot at overcoming VMware's huge market lead. But this is a rapidly growing market, and each player has a chance to carve out its own niche while luring customers away from VMware and its flagship ESX Server. Here's a detailed look at the vendors that analysts say pose the biggest threats to VMware.

Microsoft®

Inexpensive, but lacks high-availability features

Gartner analyst Thomas Bittman predicts Microsoft will hold its own vs. VMware, but not necessarily overtake the top spot in the minds of customers. "It's going to come down to VMware being the major enterprise player and Microsoft being the major midmarket player," says Bittman, who is preparing research on the virtualization market. "Everyone else is basically a niche player."

Microsoft's proprietary server-virtualization technology is one of three major architectures on the market, along with VMware's and the open source Xen hypervisor.

Microsoft's Virtual Server product never really caught on despite having several years on the market, but Redmond officials are taking aim at VMware again with Hyper-V, which is available in beta as part of Windows Server 2008 and is expected to be generally available within five months.

DiDio thinks Microsoft's partnership with Citrix — owner of XenSource — is an important leg of Microsoft's strategy, even though some analysts expect Microsoft to deemphasize this relationship when its own hypervisor hits the market.

The Microsoft-Citrix partnership involves Citrix virtualizing Windows while Microsoft supports Citrix products. Microsoft's System Center Virtual Machine Manager can manage both Citrix XenServer and the Citrix Presentation Server. Citrix's desktop virtualization product will support Hyper-V, and there will be interoperability between virtual servers running on the two companies' hypervisors, DiDio says.

Microsoft has partnerships with Novell and Sun, and says the next version of Virtual Machine Manager will manage VMware software. "Microsoft's strategy is basically to surround VMware with all these partnerships," DiDio says.

Microsoft's technology, however, is lacking two features wanted by the most demanding customers, says Jeffrey Gaggin, an enterprise software analyst for Avian Securities. One is live migration, which lets users move an application running on a virtual server from one physical device to another. With Microsoft, this migration takes 5 or 10 seconds while VMware can do it almost instantly, he says.

The second missing feature is "hot add," the ability to add memory to a server while it's running, Gaggin says.

"Beyond the hypervisor is the ability to manage all this stuff," he says. "That's where VMware really adds value. That ultimately will be a roadblock for Microsoft."

Still, "when Microsoft launches [Hyper-V], it could definitely have an impact on the [VMware profit] margin. Do people want to pay more for VMware's offering? I think that's always hard to tell," Gaggom says.

CITRIX®

Also offers desktop virtualization, but vulnerable to Microsoft

Some analysts believe Citrix has the second-best shot to make a dent in VMware's market share lead, but the praise is not universal. Citrix's key move was buying XenSource, run by the designers of the Xen hypervisor, last year for $500 million.

Citrix's potential to disrupt VMware seems to depend heavily on whether Microsoft will turn out to be more of a competitor or more of a partner.

Gartner's Bittman thinks Citrix acquired XenSource in the hopes that it could license the technology to Microsoft and prevent Microsoft from going forward with Hyper-V. Obviously, that didn't happen. He thinks Microsoft, Sun and Oracle all pose bigger threats to VMware than Citrix does.

"The only clear opportunity is right now before Microsoft enters the market," Bittman says. "After Hyper-V comes out, I wouldn't expect Citrix to be aggressive in server virtualization. Microsoft has deeper pockets. I don't see how Citrix can compete."

Nemertes Research contends that the Citrix buy will lend "significant financial and marketing muscle to XenSource" in its bid to compete with VMware, and that fiercer competition will lead to more innovation in virtualization technology.

DiDio does not see Microsoft deemphasizing its partnership with Citrix. "Microsoft needs Citrix in this thing as much as Citrix needs Microsoft," she says. "Citrix has wonderful desktop virtualization, wonderful storage management. Microsoft is late to the market on a lot of this stuff."

Sun microsystems

Hardware management background a plus, needs to execute

The Xen hypervisor provides the foundation for Sun's x86 virtualization product, known as xVM. Sun isn't alone here; practically every one of VMware's major competitors uses Xen, including Oracle, Novell, Red Hat, Virtual Iron and Citrix. Each is doing work to make sure the Xen hypervisor is more robust, but more importantly, each is trying to differentiate itself with management tools, Bittman says.

Bittman thinks Sun poses VMware the second-biggest threat behind Microsoft. "My view is, if Sun doesn't do it, it's going to be a two-horse race," he says.

Sun typically has not done well in the software market, but Bittman is optimistic because virtualization is pretty close to Sun's expertise — managing hardware.

"Managing virtual machines, it's really just one step above managing the hardware itself," Bittman says. "We consider Sun to be a dark horse. The proof has got to be in the execution."

Sun's xVM is a set of technologies for desktop and x86 server virtualization. Sun also has a SPARC hypervisor for its own hardware. Sun bolstered its virtualization portfolio a few weeks ago by purchasing Innotek, which makes desktop virtualization software targeting developers who want to build, test and run applications on multiple operating systems.

"Their real strategy is, of course, built around the Solaris operating system, virtualizing Solaris," DiDio says. "Their approach is, they have these zone containers. It gives you isolated execution environments within Solaris."

ORACLE®

Late entrant, could win over Oracle shops

Founder and CEO Larry Ellison isn't shy about finger a finger in VMware's eye. He reportedly predicted that VMware will meet the same demise as Netscape.

Ellison is finalizing a deal to purchase BEA Systems, which has a partnership with VMware

See VMware, page 19

VMware
continued from page 18

to provide Java virtualization products.

That move could foil some of VMware's plans, though it's not clear yet how Oracle intends to fit BEA into its virtualization strategy, DiDio says. Oracle is a new entrant into the virtualization market with Oracle VM, which has such advanced features as live migration, according to DiDio's Yankee Group report.

Oracle, well known for its database and application-server products, is targeting VM primarily at heavy Oracle customers, Bittman says. "They're doing it as a defensive move," he says. "They don't want VMware or Microsoft to be underlying the Oracle stack. That takes away potential control of an account. ... Oracle VM does not need to make money. The whole goal is defensive."

Yankee Group analyst George Hamilton agrees Oracle's move is essentially a competitive reaction aimed at maintaining its preexisting customer base, rather than a bold attempt to expand into new markets.

DiDio thinks Oracle is being more ambitious than that, however.

"Larry Ellison has been on a shopping spree for the last three years," she says. "Oracle wants to grab off a piece of the virtualization market."

Virtual Iron®

Affordable pricing, but a small vendor among big competitors

This vendor says it has gotten a big boost from hardware modifications developed by Intel and AMD that make it easier to develop virtualization software. Virtual Iron always supported Linux because the open source operating system could be rewritten to its purposes. Now it can support Windows as well, because of the processor upgrades, company CTO Alex Vasilevsky explained last August.

Every vendor is benefiting from hardware upgrades, however, notes Charlie Burns of Saugatuck Technology.

"The question then becomes who can support those changes with the most optimized code or the broadest functionality, or who can convince those chip designers they need to keep doing more," Burns says. Intel and AMD face a double-edged sword, he notes, because further virtualization-related improvements in hardware would let customers run more workloads on fewer servers.

Virtual Iron's management tools have live-migration and live-disaster-recovery capabilities, DiDio writes. Gartner's Bittman rates Virtual Iron as VMware's fifth biggest threat, ahead of Novell and Red Hat, which he ranks sixth and seventh, respectively.

"Virtual Iron has interesting technology, but as a small vendor it's unlikely to survive," Bittman says. "They'll probably be acquired by somebody."

Small-to-midsize companies tend to be attracted to Virtual Iron, Yankee Group's Hamilton says. "Virtual Iron's go-to-market plan is simple," he says. "They try to position themselves as having very similar capabilities to VMware at a fifth of the cost."

Novell®

Strong mgmt. tools, needs to deliver

The Xen hypervisor is embedded free of charge in Novell's SUSE Linux Enterprise Server 10, and only one Linux license is needed for all virtual images on a physical server, DiDio says. Novell tries to differentiate itself with ZENworks Virtual Machine Management, which lets customers manage any virtual environment, whether it be Xen, Microsoft or VMware.

"Novell's positioning is, they have very good management tools with the ZENworks suite," Hamilton says.

Like Microsoft, Novell might win over customers because of its expertise in managing an operating system, Burns says.

"The fact that they have a distribution of Linux, they can make changes and say 'the changes we've made here are to make it work better in a virtual environment. But [you need to] use our version of virtualization at the same time,'" Saugatuck's Burns says. "VMware doesn't have that."

Novell made a big move on Feb. 25 when it said it will spend $205 million to acquire PlateSpin, a vendor that helps customers adopt, extend and manage server virtualization in the data center.

PlateSpin markets a PowerConvert product, which performs physical-to-virtual conversions of Windows source systems into XenSource's XenEnterprise Virtual Machines.

redhat.®

Aggressive pricing, but management tools lacking

Red Hat Enterprise Linux distribution comes with the Xen hypervisor for free, while the RHEL Advanced Platform includes extra features such as storage virtualization, redundancy and high-availability clustering, DiDio says.

Red Hat's strategy is made more interesting by RHEL recently becoming available on Amazon.com's Elastic Compute Cloud (EC2) service, in which users pay small monthly fees, she adds.

"Red Hat is aggressively advertising the fact that its virtualization solution is far more economical than VMware's," DiDio notes. Red Hat vice president Scott Crenshaw has claimed that businesses can save "$20,000 to $30,000 on licensing fees" compared with VMware, she adds.

Bittman dismisses Red Hat's chances, saying its management capabilities are subpar.

Red Hat's position is similar to Novell's, Saugatuck's Burns says, with each having the advantage of distributing its own Linux operating system. "At this point, it's really a matter of who does it first," he says. "Who gets it out first and in a reliable, robust fashion, he adds.

vmware®

Needs to watch its back, continue to innovate

VMware certainly has not been standing still in the face of its competition growing larger and more robust. VMware struck a deal in January to buy application-virtualization vendor Thinstall. VMware hosted VMworld in Europe from Feb. 26-28 and made several announcements, including agreements with HP, Dell, IBM, Fujitsu and Siemens to ship servers with a slimmed-down version of VMware's hypervisor embedded in the hardware.

VMware officials aren't worried about the competition, says Stephen Herrod, VMware's CTO, who says "products from would-be competitors aren't really there yet." (Read an interview with Herrod at www.nwdocfinder.com/3046.)

VMware may be forced to lower its prices, DiDio says, but overall the company is making the right moves.

"The market is VMware's to lose. And these competitors are going to have to take it away from them," she says.

Beyond those already mentioned, the virtualization market includes niche players, such as Cassatt, Egenera and Parallels. If enterprise customers expand their use of virtualization as much as some analysts predict, even someone holding 1% of the market could be quite successful. "We're just at the precipice of an emerging market. Any of these niche players could be huge," DiDio says.

Hardware advances are making it easier for more vendors to develop virtualization software. VMware can retain its dominant market share, but it'll need to outwork its competition.

"[VMware's] technology is still ahead of the competition. But the side of the road is littered with companies that had superior technology and got out-marketed. Think Netscape," Hamilton says. "[VMware] is going to have to carve out more of a value proposition than just being the only vendor out there."

NEWS ANALYSIS

Apple iPhone to take on BlackBerry?

BY BRAD REED AND JOANIE WEXLER

Now that Apple's iPhone has swept the consumer market off its feet, it's moving toward becoming a dominant enterprise device as well.

During a media conference at its San Francisco headquarters last week, Apple unwrapped a host of new features that are designed to make the iPhone more attractive to corporate users. The biggest piece of the enterprise package will give iPhone users access to Microsoft's Exchange ActiveSync, which will provide them with secure over-the-air e-mail, contacts, calendars and global address lists.

The addition of Exchange ActiveSync's built-in support will give IT departments the ability to set password policies, to set up VPN settings and to perform remote data wipes on iPhones that have been lost or stolen, Apple says. The iPhone will also soon support Cisco IPsec VPN, which Apple says will "ensure the highest level of IP-based encryption available for transmission of sensitive corporate data."

Both Exchange ActiveSync and Cisco IPsec VPN will be made available in Apple's iPhone 2.0 software, which the company says is scheduled to be released in June and will be given to all iPhone customers as a free software update. Apple CEO Steve Jobs, who acted as master of ceremonies at the media event, declined to comment directly when asked if Apple hoped that its corporate upgrades to the iPhone would make it competitive with Research in Motion's popular, enterprise-centric BlackBerry mobile device. Jobs did, however, allude many times to RIM's recent network outages, and he took some subtle digs at the BlackBerry's security infrastructure.

"You have to wonder about [BlackBerry] security" Jobs said during a Q&A session following the announcement. "All BlackBerry e-mails go through [RIM's network operations center] in Canada... you have to wonder, can someone look at my e-mail while it is there?"

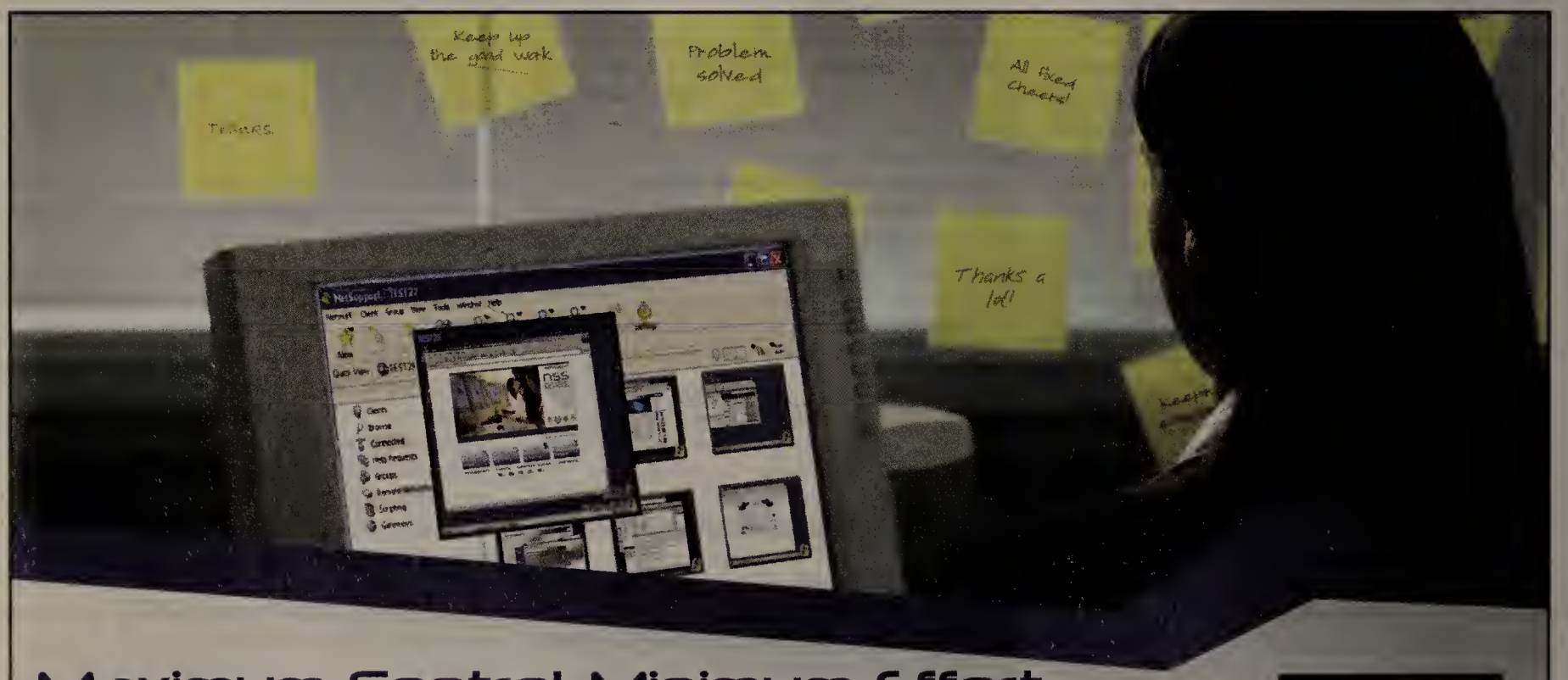
Over the past year, some analysts have warned IT departments to not allow the iPhone to connect to their networks, noting that it has no way to deliver secure corporate e-mail or to encrypt data sent and received through the device. Phil Schiller, Apple's senior vice president of marketing, acknowledged these concerns and said that these new features were a reflection of what Apple customers have told the company would make the device enterprise-worthy.

In addition to bringing access to Exchange ActiveSync and Cisco IPsec VPN, the iPhone software update will include a copy of the long-awaited iPhone software development kit (SDK), which was first announced last October and was initially scheduled to be released in February. Jobs said at the time that he hoped the SDK would prompt software developers to create their own applications for the iPhone.

Several third-party developers demonstrated applications they developed using the iPhone SDK at the conference, including an iPhone-friendly version of Instant Messenger from AOL, an adaptation of Electronic Arts' popular game Spore and an application designed by medical software developer Epocrates that provides healthcare professionals with secure mobile access to patient medical information.

Apple said that new applications for the iPhone could be purchased through the App Store, an application that will let users download the applications directly to their devices. Apple is letting developers set their own prices for the applications and will give them 70% of all sales revenue they generate. The App Store application will also be part of the iPhone 2.0 software upgrade, the company said.

The iPhone SDK marks the first time that Apple has openly welcomed outside developers to create applications for the iPhone. ■



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Microsoft simplifying ID mgmt.

'Identity bus' would let applications plug into security, other services

BY JOHN FONTANA

Microsoft is working on a series of upgrades to its directory and identity technologies in the coming months with the goal of creating a service-based identity platform.

Microsoft is leaving itself plenty of wiggle room saying that upgrades for such Active Directory and client-based features as Federation Services, CardSpace, Identity Lifecycle Manager and claims-based access control will come in 2008-plus. If the company follows its stated development plans to release a minor upgrade to the server every two years, the "plus" would be 2010.

But the upgrades to the directory and identity platform would be anything but minor, and the presence of the claims-based access control features points to the fact that Microsoft would like to see identity become more of a simple service and less of a complex infrastructure companies are forced to build and maintain.

Microsoft is already using claims-based access for SharePoint and Rights Management Server. Claims are a set of statements that identify a user and provide specific information. They are read by applications to make decisions on who gets access, who can retrieve content or who can complete transactions.

Last week, at NetPro's Directory Experts Conference, Microsoft expanded on its idea to create a set of identity pieces that snap together via standard protocols and provide what the company referred to last week as an "identity bus."

The bus would move claims and be available for applications to plug into in order to take advantage of security and access control features. The bus could live on either side of the firewall and would have many places on the network where "transformers" could accept and dispense claims in many different formats.

Some experts believe Microsoft plans to head straight toward building such a services infrastructure and bypass the current behind-the-firewall approach to identity.

"I think their real aim is to skip this whole generational identity and access issue and go straight for the services goal," says Earl Perkins, an analyst with Gartner. "By doing this they will be positioned for the consumer space and the extranet, and they can show up to compete with Google and already have security and identity. So this platform is not ready yet, but in 24 months it will be closer to reality."

Perkins says the services platform could be adapted within enterprises by having integration experts such as the Oxford Computing Group, which specializes in Microsoft identity and access management technologies, build what companies need internally.

"It still seems to me that a lot of different [Microsoft product] teams are in play, there are a lot of different ideas as how to move identity forward within Microsoft," says James Booth, director of the Oxford Computing Group. "They are still trying to figure it out themselves."

The services idea, however, is not far-fetched. Just last year, Microsoft CEO Steve Ballmer said at the company's annual partner conference that every piece of Microsoft's shrink-wrapped software would have a services element and he called out Active Directory by name.

Last week, Joe Long, general manager of the connected identity and directory at Microsoft, wasn't quite that blunt.

"My team is focused on delivering products that solve enterprise problems," Long said. But he said the ultimate goal was to reduce complexity, and he showed a new management interface and a PowerShell script-driven automated tool for setting up federation that will ship during the 2008 "plus" time frame. Active Directory Federation Service (ADFS) 2.0, also slated for that time frame, is where Microsoft plans to begin shifting from a Web single sign-on model to more of a pluggable platform for applications.

"We want to make it so you can take these products, install them, and take advantage of them without having to work two months, two years, 10 years with a developer or integrator to get it to work."

Microsoft also detailed its concept of an identity bus that would be a plug-and-play service for applications needing to authenticate and authorize users.

Stuart Kwan, director of program management for identity and access for Microsoft, said the bus would feature transformers, places where data contained within claim would be translated into different formats depending on an application's need. Kwan said the transformers could handle such things as Kerberos, X.509 certificates and assertions based on the Security Assertion Markup Language (SAML). Claims can come from Active Directory, LDAPv3-based directories, application-specific databases and new user-centric identity models such as LiveID, OpenID and InfoCard systems, including Microsoft's CardSpace and Novell's Digital Me.

"Transformers allow us to fold, spindle and mutilate the data in any way we want. It lets us adapt to the infrastructure without completely destroying the applications," Kwan said.

In addition to the services angle, Microsoft said it is revisiting its stand on key protocols it does not support, which could prove critical to the success or failure of a services-based platform.

The protocols include the entire SAML 2.0 specification, Service Provisioning Markup Language and Extensible Access Control Markup Language.

"Microsoft has introduced an interoperability promise, and we are trying to understand the ramifications of that," Long said. "Hopefully we can make a commitment one way or the other in the next few months." ■

Moving forward

Microsoft has a road map for upgrading its directory that will likely be completed by the time the R2 version of Windows Server 2008 ships in two years. Microsoft is coy on timing, saying only that improvements will come in 2008-plus.

Federation services

- ADFS 2, new ease of management and federation capabilities
- Windows LiveID support; Managed InfoCards
- Windows CardSpace 2.0

Identity life-cycle management

- ILM 3.0

Other

- Identity and access management programming platform
- Support for Office 14
- Claims-based access control

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www.nwdocfinder.com/3322

IPv6 allocations: The tide comes in

BY DAN CAMPBELL

2007 was a big year for IPv6. The five regional Internet registries — tasked by the Internet Assigned Numbers Authority to govern IP address allocations — made a total of 379 IPv6 allocations last year. That is about 70% growth from 2006 and close to the 2002 peak, a dramatic jump from what was a five-year pattern of decline. Clearly there is interest and movement toward IPv6.

All RIRs made more allocations in 2007 than in 2006 with the exception of the African Network Information Centre (AFRINIC), which was just slightly down. Because AFRINIC serves such a large geographic area it saw the most growth in overall allocation. The Latin American and Caribbean Internet Address Registry also continued on a fast pace, with the Asia-Pacific Network Information Centre and the RIPE Network Coordination Centre in Europe moving steadily along as well.

The big story is the American Registry for Internet Numbers (ARIN), whose 114 allocations represent about 42% growth. ARIN serves the United States, which is often said to have little interest in IPv6 and is behind the rest of the world. That appears to be changing, most likely as a result of the self-imposed June 2008 government mandate for IPv6 compliance.

It is worth noting that most allocations made were to service providers. Until 2007, RIR policies dictated that enterprises must acquire IPv6 addresses from their upstream service providers. There were no policies that allowed enterprises to acquire provider independent, or "portable," allocations directly from an RIR. Although this policy had the good intentions of promoting address aggregation and controlling routing table growth, it fell under scrutiny for various reasons.

First, the policy contradicted the primary motivation for IPv6, which is the dwindling IPv4 address space, the difficulty many organizations have in acquiring addresses and the many side effects that presents. The policy led to this conundrum: "I can't acquire IPv4 addresses and am being told to migrate to IPv6, but despite IPv6's virtually infinite address space, I still can't acquire my own addresses?" Notwithstanding the benefits of aggregation, this contradiction was tough to defend.

Second, the policy creates an anticompetitive situation. Regardless of IPv6 features that make renumbering easier, changing a live network's address scheme is always logistically complicated and disruptive. An enterprise may decide to stick with a service provider it may be unhappy with simply to avoid the risk and effort involved in renumbering.

Third, the policy created problems in multihoming scenarios. In today's world where application and network availability are truly mission critical, creating redundancy through multihoming is a must for many organizations. In IPv6, it is policy that service providers only announce their aggregate blocks and not that of other service providers. This creates a hardship for those who want to have multiple upstream providers.

For these and other reasons — and only after considerable debate that is still ongoing — the restriction on provider-independent space needed to change. IPv6 provider-independent policies have recently been adopted by some RIRs and are up for consideration by others. Because these polices are new, they have not been taken full advantage of yet.

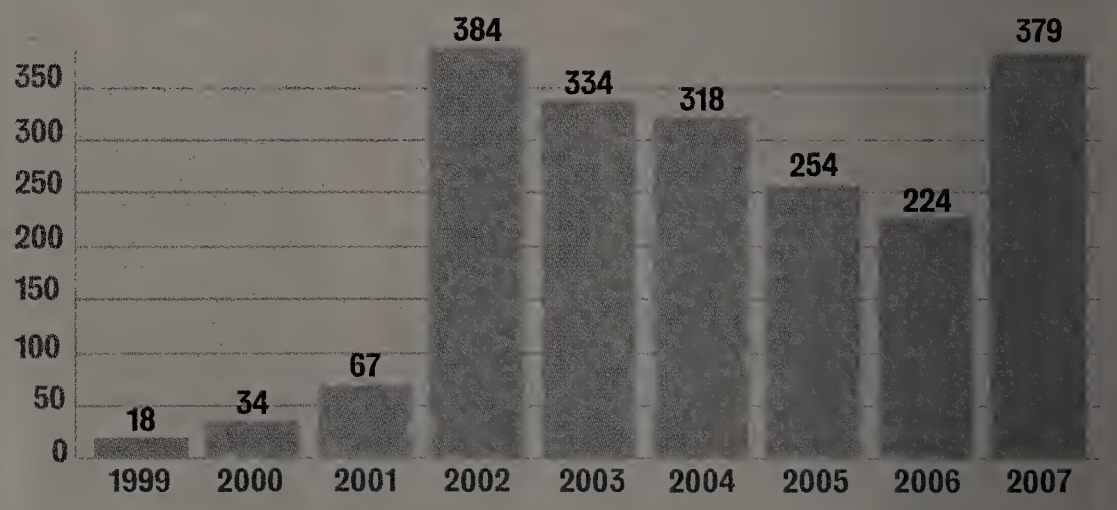
So what does all this mean for 2008? It is likely that IPv6 will gain even more momentum. Many international deployments will actually gain visibility. China will unveil its national IPv6 network at the 2008 summer Olympic Games in Beijing, and the U.S. government mandate is set for June. This will influence deployments on the commercial service provider side as well.

In 2007, we saw announcements about IPv6 backbone deployments from major service providers such as Verizon and Sprint. As IPv6 provider-independent allocation policies kick in, it is likely there will be a considerable boom on the enterprise side. All told, 2008 may be the year that IPv6 makes it to prime time.

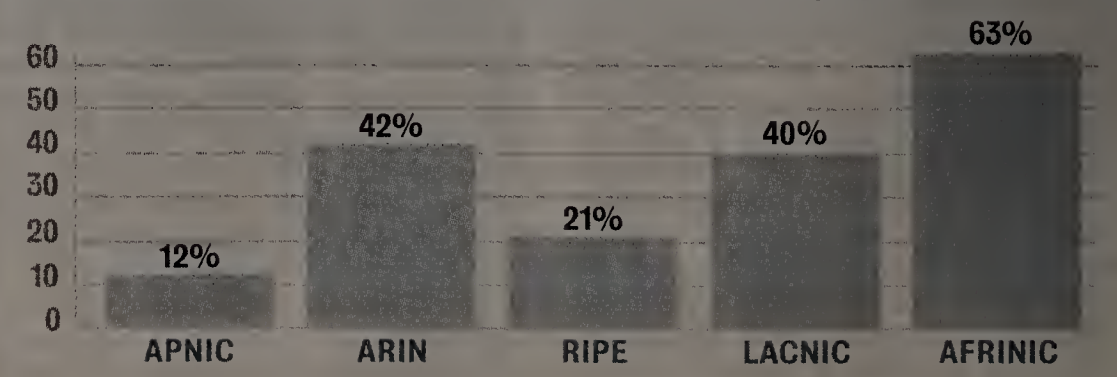
Campbell is president of Millennia Systems and can be reached at dcampbell@millenniasystems.com.

After years of decline, 2007 was a turning point

IPv6 address allocations



IPv6 allocation growth in 2007 by regional Internet registries



_INFRASTRUCTURE LOG

_DAY 74: This is so complicated. We're spending all our time and money managing our boxes. Gil says he has a big idea for how to better manage our x86 environment.

_Gil's big idea: sheepdogs...says they work for biscuits.

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GEARHEAD

Mark Gibbs

Parallels Virtuozzo Containers 4.0, Part 1

Last week I started with a couple of tips on Gmail.

A reader who shall remain anonymous wrote in to ask "how to get my auto signature to stay at the bottom of my reply when I reply to a chain mail in Gmail. Today it goes to the end of the chain mail."

Dear Anon.: There is no way I know of to do this, but why are you replying to chain mail? Chain mail is a curse of the Internet and isn't worth dealing with. Of course, that's just my opinion.

Here's another Gmail tip: If you use labels in Gmail and you use an RSS feed reader that supports authentication, you can get an RSS feed for any particular label by using the URL https://mail.google.com/mail/feed/atom/label/ (obviously your name and password connects you to your account despite the generic URL). Even more cunningly, unread mail is automatically assigned the label "unread" so you can keep an eye on what's waiting for you with https://mail.google.com/mail/feed/atom/unread/.

Anyway, last week I began discussing the recently released Parallels Virtuozzo Containers 4.0, a product that performs operating system virtualization. I summarized my thoughts about Containers as "Outstanding! Amazing! Way cool!" and promised to tell you why.

First of all, let me explain what Containers is. Unlike products such as VMware (which I still love in an unnatural way), Containers virtualizes the operating system it runs on rather than creating virtual machines – VOSs rather than VMs, if you will.

Operating system virtualization makes the host OS services available by routing application calls from the VOSs to the shared host OS. In the VM architecture, an entire PC hardware environment is simulated in each virtual machine.

On the plus side for VOSs, the memory usage and CPU utilization overheads are lower because there's only the host OS handling the system calls rather than one OS per virtualized environment. This means you can get more VOSs running on a given platform than you can when using VM (Parallels claims three times as many).

That's the plus side. On the minus side, all of the VOSs must be of the same type as the host operating system. With a VM architecture, because it emulates an entire hardware platform, you can run pretty much any mixture of operating systems.

Here's a curious thing I discovered while testing Containers: You can run Containers and VMware on the same platform at the same time! For testing purposes this is a little slice of paradise.

Containers is available for 32- and 64-bit x86 processors for Windows Server 200x and Linux, as well as for Linux IA64 on Itanium processors. Best of all, the minimum requirement is a Pentium III processor with 1GB of RAM so it will run on your older server hardware.

Installing Containers — at least for Windows 2003, as I did — was a no-brainer, but as with any system-level software, you've got some fairly serious reading to do to understand all of the ins and outs of the product.

Once installed, you launch the Parallels Management Console and create containers — that's what the virtualized operating system instances are called — from templates. These templates provide a predefined set of services and applications.

I swear the space for this column gets smaller every week, or maybe the products just get bigger. Next week we'll get deeper into Parallels Virtuozzo Containers.

Briefly brief me about how you are putting virtualization to work in your shop by writing to gearhead@gibbs.com.

COOLTOOLS

Keith Shaw

Netgear gaming kit adds 802.11n to your net

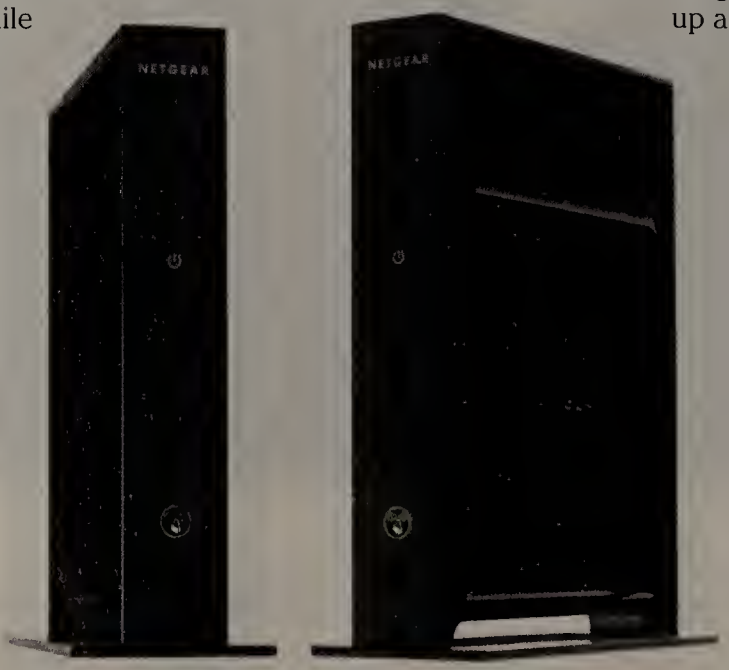
The scoop: HD/Gaming 5GHz Wireless-N Networking Kit, by Netgear, about $200.

What it is: The kit contains two pieces of hardware that let users create a wireless bridge between a router and a client. The main goal is to allow for network access for Ethernet-enabled devices that don't have wireless or hard-wired connections near their locations. This can include networked set-top boxes, home entertainment consoles (including Netgear's own EVA8000), and even video game consoles. While other connectivity options exist, such as powerline network adapters or other wireless Ethernet bridges, this system is cool because it offers the faster 802.11n wireless technology.

Why it's cool: The beauty of this design is that in addition to creating a bridge for a game console or other Ethernet device, the system creates an additional 802.11n-based wireless network. If you have an existing 802.11g router, for example, instead of ripping up that entire system and buying a new 802.11n-based router, you can create an 802.11n network through the creation of this bridge.

Here's how it works: The device connected to the existing wireless router also acts as its own access point, using 802.11n to connect to the client. The second device, acting as the client, automatically connects, but because the first device is acting as its own access point, the system creates its own Service Set Identifier name and wireless security settings. Any additional clients with the ability to connect via 802.11n or 802.11a (a very nice surprise) can connect to the first device over the faster wireless link. IP addressing is still handled by the original router; the user is just getting the benefit of the faster 802.11n wireless link.

Setting up the system for the first purpose (connecting a game console to the network) was a breeze. The kit comes with power adapters and Ethernet cables; it was just a matter of plugging in and waiting a few minutes for the boxes to boot up and talk to each other. When I had the system connected to an Xbox 360, the system was able to get its IP address assigned without any difficulty, and I was up and running with no problems.



Netgear's 802.11n wireless gaming kit creates a wireless bridge between a router and a client.

Some caveats: The only problem I experienced was trying to figure out the pass phrase for the 802.11n portion of the network. But after installing the configuration program on my wireless notebook, I was able to access the "access point" device and discover the pass phrase. A bonus point for Netgear — the system comes with WPA Personal encryption as the default setting, as opposed to other systems that don't have security enabled automatically.

Grade: ★★★★★ (out of five)

Shaw can be reached at kshaw@nww.com. Watch Cool Tools and other exciting Network World videos at www.networkworld.com/video.

_INFRASTRUCTURE LOG

_DAY 75: These cables are everywhere!! Connecting underutilized servers to more underutilized servers. Our energy usage is out of control!!

_DAY 77: I found a way out of this mess: the super-efficient IBM BladeCenter® It helps us manage power and cooling usage with intelligent Cool Blue™ technology. And with the latest Quad-core Intel® Xeon® processor, we won't have to sacrifice performance for efficiency. So out with cables, in with blades.

_DAY 79: Gil's stuck under the ball. Tried calling his wife. Turns out the photo of his family came with the frame.

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DRM: a slow clue train?

NET INSIDER
Scott Bradner

Random House is the latest major content owner to start to think that maybe not all of its customers are crooks.

The New York Times reported on March 3 that Random House has decided to offer all of its audio books without digital rights management (DRM) unless a particular retailer or author objected. The *Times* reported that Penguin Group would soon follow. The realization that maybe exploring new business models makes more long-term sense than trying to make a model predicated on the distribution of physical objects work in a digital age has been slow, and far from uniform, but progress is being made.

To date, most major music publishers have embraced DRM-free distribution, some with more enthusiasm than others. For example, Sony-BMG seems to want to prove to itself that the market does not want DRM-free music. It has come up with a clumsy and expensive process that requires a would-be purchaser to visit a retail store before being able to download a DRM-free copy of one of a few albums. Sony's competition could not have designed a better system for Sony if the primary aim had been to minimize the chance of success.

Most of the other major music publishers have been offering DRM-free music through Amazon.com or Apple iTunes. A number only use Amazon.com, maybe to try to reduce Apple's power over them. That sort of reaction is quite pathetic considering that Apple's iTunes proved that the music download business was actually viable.

Random House did not decide to join the DRM-free world without thinking about it. In a letter (www.nwdocfinder.com/3024) to industry partners in late February, the publishing house said that it had run some tests and, like music publishers, had not found a correlation between removing DRM and an increase in piracy. They also noted that an author's royalty would be 50% higher for digital downloads than for CD sales.

Random House is willing to continue to support authors that fear the new world but made it clear that Random House does not think that is a good path to follow. In the letter, it wrote "if an author is willing to forgo the potential for increased sales through DRM-free retailers, we will be able to support that option."

A few months ago I wrote about University of Minnesota researcher Andrew Odlyzko's thinking on the subject of DRM. "Control vs. usability: What's DRM's future?" (www.nwdocfinder.com/3023). The move by Random House and, potentially, Penguin Group are in recognition of the reality that Odlyzko wrote about.

Not everyone sees the same reality. A few vendors of high-end software still insist on using DRM of one kind or another. One such company is ColorByte Software, developer of the ImagePrint software I use to print on my new Epson 4880 printer. This software will only run if a hardware token is plugged into the computer, making me think that ColorByte assumes I am a thief).

Movie publishers comprise another major class of nonbelievers. I expect they will come around eventually but it could be quite a while. Meanwhile, their wares will continue to be distributed illegally and they will continue "to forgo the potential for increased sales through DRM-free retailers." But they are free to choose that option.

Disclaimer: Choice, even if constrained by minimum requirements, is what a university is all about. But Harvard, as far as I know, has not expressed any opinion on the viability of sticking to obsolete business models, so the above is my own opinion.

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.

The business case for mobile collaboration

EYE ON THE CARRIERS
Johna Till Johnson

The business case for mobile collaboration. You hear a lot these days about two topics: mobility and collaboration. Unified communication and collaboration is getting promoted by vendors ranging from Microsoft and IBM to Cisco, Avaya and Nortel.

And mobility is front and center on everyone's minds. Most IT folks I talk to expect an exponential increase (more than 100%) in the number of mobile-enabled workers in their organizations over the next 12 months.

The gotcha? How to cost-justify the investment in mobility and collaboration. Mobility is particularly expensive — the average cost per mobile employee is around $2,200 per year, including hardware, software, services and support. And in this day and age, something so expensive doesn't get implemented without a solid ROI.

Here are some tactics for creating that ROI for mobility and collaboration.

First, remember two key points: The primary benefit of mobility is that it speeds things up. That is, employees don't need to wait until they're back in the office to access information. The primary benefit of collaboration is that it improves overall context — employees have a better and more targeted information base from which to make decisions.

So when you're looking to make the case for mobility and collaboration, look for scenarios in which improving the timeliness and accuracy of a process can net clear rewards. This usually involves business processes in which employees are working away from their desks — out in the field, in front of customers, or helping patients in hospitals. (Often, these are employees who don't have a desk in the first place).

Once you've outlined a handful of potential case studies, look closely at how these folks are working. Pay special attention to how they handle record-keeping, data entry and data gathering. If it involves a trip back to headquarters, rather than happening on the spot, that process can probably be improved with mobility. For example, sales agents whose job involves products in retail stores benefit from being able to order replacement products on the spot — and being able to do so may keep competitors' products from gaining shelf space. Thus, mobile-enabling sales agents results in a net increase in the revenue they drive.

Similarly, adding instant messaging to help desks can increase the number of customers that a single help-desk agent can process — and the satisfaction level of the customers. Increased satisfaction levels has a direct correlation with repeat business.

Don't try to boil the ocean. Once you've identified a few likely candidates, pick a single business process, and work closely with the owner of that process to craft a program that demonstrates a clear ROI. Once you've proven it in one case, you can expand the project across the company.

And don't hesitate to ask vendors and suppliers for help. Cisco and AT&T have programs for key clients in which they'll provide consulting resources to craft business cases, at no charge. Smaller organizations may need to seek paid support from consultants, but it's money well spent if you can justify a broader rollout.

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

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TOLLY

Benchmarks

Volume 7, Issue 1

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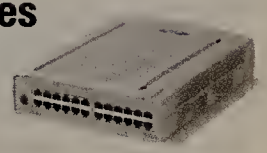
McAfee's Total Protection Service offers lower TCO than Symantec and Trend Micro products

3 **Nortel ERS switches show "green" by offering lower port costs, better energy efficiency than Cisco/HP gear**
ERS 2500/4500 offer up to 63% lower price per port than other products tested and use less energy for power and cooling

4 **Tests reveal HP StorageWorks SAN Kit eases installation**
StorageWorks results in nearly 2/3 fewer deployment steps compared to traditional SANs and also boosts I/O performance

5 **Nortel BES switches pack performance punch, offer cost advantages for SMBs over rival products**
BES switches delivered wire-speed performance while costing considerably less than Cisco/HP switches tested



6 **Radware data center switches demonstrate lead over F5 Networks devices in Layer 7 and security tests**
OnDemand Switch Series routinely outperforms F5's BIG-IP 6800 and smaller models during Layer 7 performance and security tests

7 **Tests highlight security prowess of NetClarity EasyNAC appliances**
Delivers effective security through proactively discovering and managing common vulnerabilities and exposures

8 **Fujitsu XG2000 switch attains 10GbE throughput, ultra-low latency in performance tests**
XG2000 switch couples ultra-low latency with zero-loss throughput for all 14 frame sizes tested

March 2008

THE TOLLY GROUP

Tolly Benchmarks is a regular advertising supplement that highlights innovative and compelling technology research conducted by The Tolly Group, the industry's leading independent testing and strategic consulting organization based in Boca Raton, FL. **For more information** on any of the products or technologies covered here, visit The Tolly Group's Web site at ***http://www.tolly.com***.

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McAfee security service delivers "Total Protection" with lower TCO than Symantec and Trend Micro solutions

Sponsor: McAfee, Inc.
Document number: 208255
Product class: Security software
Products under test:

- McAfee Total Protection Service
- Symantec Endpoint Protection Small Business Edition 11.0
- Trend Micro Client Server Messaging Security for SMB

Testing window: December 2007
For more info on this test, see:
http://www.mcafee.com

A Tolly Group study commissioned by McAfee, Inc. shows that McAfee's Total Protection Service[1] lowers TCO to less than half of Symantec Endpoint Protection Small Business Edition 11.0 and Trend Micro Client Server Messaging for SMB products.

The TCO analysis reveals that the McAfee solution costs $2,374 for the first year and $3,561 with the purchase of a two-year contract. The first-year costs for the Trend Micro and Symantec solutions can be as much as 260% (or 2.6X) higher than McAfee due to management server deployment and maintenance costs. Given even a conservative estimate of the cost associated with the local management server for Trend Micro and Symantec, for the first year, SMB users will spend $5,520 for the Trend Micro solution and $6,255 for the Symantec solution.

If users purchase a two-year support contract, they will spend $6,970 for the Trend Micro solution and $8,854 for the Symantec solution. This shows that with a two-year contract each user costs $36 per year with McAfee, $70 with Trend Micro and $88 with Symantec.

Even if engineers zero out the cost of running the management server in the local network, the subscription fee for McAfee's 50-user solution is similar with the Trend Micro 50-user solution but about 25% cheaper than the Symantec 50-user solution. This proves that regardless of the costs associated with a management server, McAfee users spend the same amount of money or less.

The study also shows that McAfee's service provides users with greater flexibility and higher reliability for SMBs than its counterparts because all McAfee users need to do is to buy more subscriptions as their businesses scale and they leverage a management server infrastructure that is maintained by dedicated, specialized McAfee support professionals. This is a key driver and value proposition of a service solution.

Testing also shows that McAfee's Total Protection Service has a much faster deployment versus comparable Symantec and Trend Micro offerings primarily because no management server system needs to be installed and provisioned.

In the end, by saving money and time, users can focus their company's efforts on core competencies, leaving the management of your IT security solution to the experts.

[1] *Formerly known as McAfee Total Protection for Small Business — Advanced*

TCO of Endpoint Protection Solutions for SMBs (50 Users)

Security as a Service vs. Traditional Software Solutions

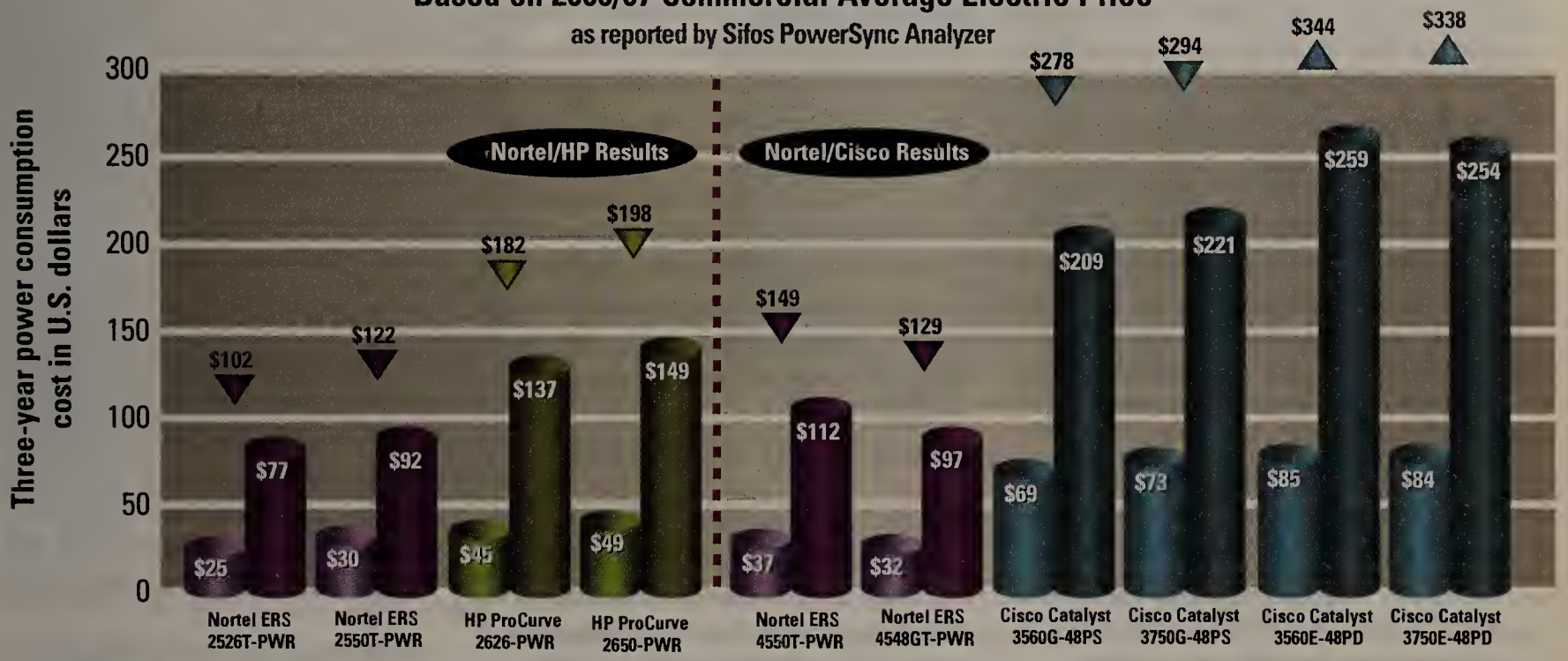
- Provides dramatically lower Total Cost of Ownership (TCO) than Symantec and Trend Micro's software solutions
- Increases reliability and availability by alleviating the need for in-house IT infrastructure and resources
- Eases client installation via simple URL click — no specialized IT skill is required to set up management server and configure client stations
- Offers greater flexibility to company's growth compared to Symantec and Trend Micro's solutions

View the full report at:
http://www.tolly.com/DocDetail.aspx?DocNumber=208255

Nortel thinks "green" as Ethernet switches offer lower port costs, better energy efficiency than Cisco/HP gear tested

Three-Year Operational Cost of Switches Tested in Default Mode Based on 2006/07 Commercial Average Electric Price

as reported by Sifos PowerSync Analyzer



Note: Left bar of each pair represents three-year cost for power used in heat dissipation (converted back from BTU/hr); right bar represents three-year cost to power switch. Triangle points represent the three-year costs related to switch power consumption and heat dissipation.

A recent report commissioned by Nortel shows that the company's ERS 2500/4500 Series switches cost up to 63% less than Cisco and HP ProCruve switches tested while delivering power over Ethernet. The tests also proved that the Nortel switches were the most energy efficient, using 41% to 56% less energy than other devices tested.

Tolly Group engineers validated the price per port to deliver ~ 15.4W across all ports in a 48-port switch. The results show an average savings of $237 per PoE port when using the Nortel ERS 4550T-PWR and 4548GT-PWR with an RPS 15 against Cisco Catalyst 3560E-48PD and 3750E-48PD.

Supporting 48 PoE ports, the Nortel ERS 4550T-PWR with RPS 15 achieved the lowest price per PoE port at $146, while the Nortel ERS 4548GT-PWR with RPS 15 cost $150 per port. This is 50% to 55% less than the per-port prices for the Cisco Catalyst switches. The per-port prices for the Catalyst 3560E-48PD and 3750E-48PD were $312 and $458, respectively.

When engineers tested 21 full-power PoE ports on the Nortel ERS 4500 Series and the Cisco Catalyst 3560G-48PS and 3750G-48PS switches, they found that the Cisco devices, on average, cost $326 more on a per-port basis.

Cost savings aside, The Tolly Group's hands-on evaluation found that network managers can take advantage of the multiple PoE power management features offered on the Nortel PoE switches. Engineers were able to configure the Nortel ERS PoE switches to set the power threshold, power usage priority, and different PoE classes. Plus the Nortel ERS showed a quick recovery, often in less than 15 seconds, when a PoE port had to shut down to protect the PoE switches.

Environmentally friendly device characteristics, such as low power consumption and heat dissipation, are becoming key criteria for switch deployments, especially those providing PoE

From an operational cost standpoint, the Nortel switches in this test were up to 56% less costly than the Cisco and HP ProCurve devices tested. The reduction in power consumption validates that the Nortel switches are "greener" than the competitive products tested.

View the full 4548GT-PWR report at:
http://www.nortel.com/data

- **ERS 4500 Series offers 62% lower price per port than Cisco E Series switch tested in a 48-port scenario running full power PoE (~ 15.4W) across 48 ports**
- **ERS 4500 Series offers 63% lower price per port than Cisco non-E Series switch tested in a 48-port switch running full power (~ 15.4W) in half of the switch ports**
- **ERS 2500 Series offers 51% lower price per port than HP ProCurve 2600 Series in a 24/48-port switch running full power PoE (~ 15.4W) across 12 ports**
- **Nortel's PoE switches were the "greenest" using 56% less power than Cisco devices tested and 41% less power than HP devices tested**

Special Advertising Section
TOLLY

Tests reveal HP StorageWorks 8Gb Simple SAN Connection Kit redefines ease of SAN installation and boosts I/O performance

A February 2008 hands-on evaluation by The Tolly Group finds that a new high-speed Fibre Channel (FC) connection kit from HP will vastly simplify deployment for enterprise and SMB users, while also dramatically increasing performance.

The storage area network (SAN) solution is anchored by the HP StorageWorks 8Gb Simple SAN Connection Manager (SSCM), which uses an intuitive wizard to help installers walk through SAN setup, provisioning and managing a SAN in almost a third of the time required to piece together traditional SAN solutions. This application is included with every HP switch.

The StorageWorks 8Gb Simple SAN Connection Kit combines HP StorageWorks 81Q PCI-e FC host bus adapters (HBA) and an HP StorageWorks 8/20q FC switch, based upon technology OEMed from QLogic to connect to either the HP Enterprise Virtual Array (EVA) or Modular Smart Array (MSA) storage systems.

The simplicity delivered by the HP StorageWorks Simple SAN Connection Kit is well beyond the installation capabilities provided by earlier generation 4Gb SANs. For the evaluation, Tolly Group engineers compared the HP SAN solution to a 4Gb Fibre Channel SAN solution based upon HP servers, a 4Gb HBA, an HP 4Gb switch, and their respective management applications.

These tests showed that the HP 8Gb FC solution required only 33 steps and 7 variables to install the solution compared to 85 steps (2.6X more) and 21 variables (3X more) for the older SAN solution. This translates into fewer human errors when deploying the HP StorageWorks kit. This also helps in provisioning and managing storage by using just a single efficient application, the HP SSCM. To provide a bit more context, engineers noted that when using the SSCM on average a SAN installation completed in 15 to 20 minutes. With the 85 steps required for the traditional SAN solution, engineers needed two hours for the first installation, but that time is largely dependent on the level of SAN expertise the installer can offer.

The ease of deployment is attributed to the single management application — the StorageWorks SSCM — that is used for each component (HBAs, switches and storage targets), rather than using a hodge podge of tools to configure each component independently.

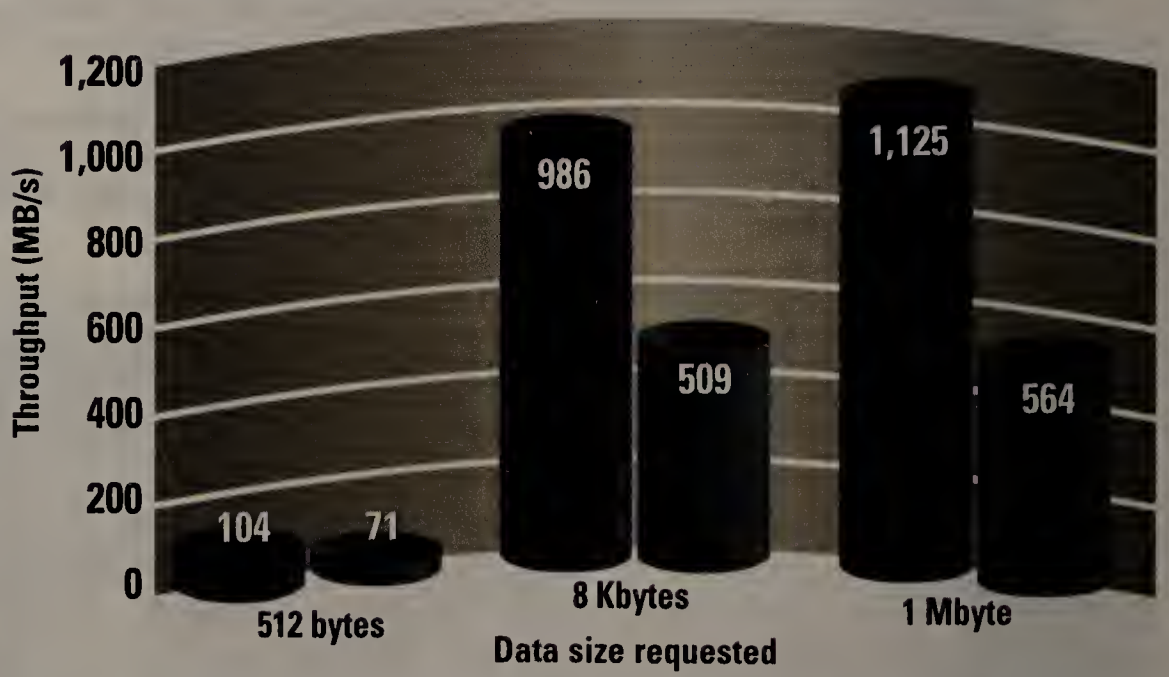
On the performance side, the HP StorageWorks 8Gb SAN solution delivered anywhere from 31% to 52% more I/O operations per second than the older 4Gb SAN, and achieved maximum throughput of 1,125 Megabytes per second (MB/s), or up to 50% more throughput than offered on the 4Gb SAN solution.

- **Simplified Fibre Channel SAN installation and management with single management pane**
- **Nearly two thirds reduction in deployment steps compared to traditional SAN solutions**
- **Provides one third the number of variables to complete than a typical SAN installation**
- **Delivers up to 51% more inputs/outputs per second and 50% more throughput (Mbps) than 4Gb Fibre Channel solutions**

If ease of deployment and performance is not enough justification, pricing for the StorageWorks 8Gb SAN solution is comparable to prior-generation 4Gb solutions, making this kit that much more enticing.

View the full report at: ***http://www.tolly.com/DocDetail.aspx?DocNumber=208276***

Throughput Comparison of HP StorageWorks 8Gb and Traditional 4Gb Fibre Channel SAN Solutions



Note: Each test scenario was based on 70% read and 30% write operations with random distribution.

Sponsor: **Hewlett-Packard Co./ QLogic Corp.**

Document number: **208276**

Product class: **Storage area network**

Products under test:

- HP StorageWorks Simple SAN Connection Manager (SSCM) (ver. 1.0.0.1)
- HP StorageWorks 81Q PCI-e FC HBA (two 8Gb FC ports with ver. 4.02 and drive ver. 9.1.6.15)
- HP StorageWorks 8/20q FC switch (ver. 6.9.0.8.0)
- HP StorageWorks EVA4100 disk array with two HSV200 controllers and eight 146GB 10K HDD

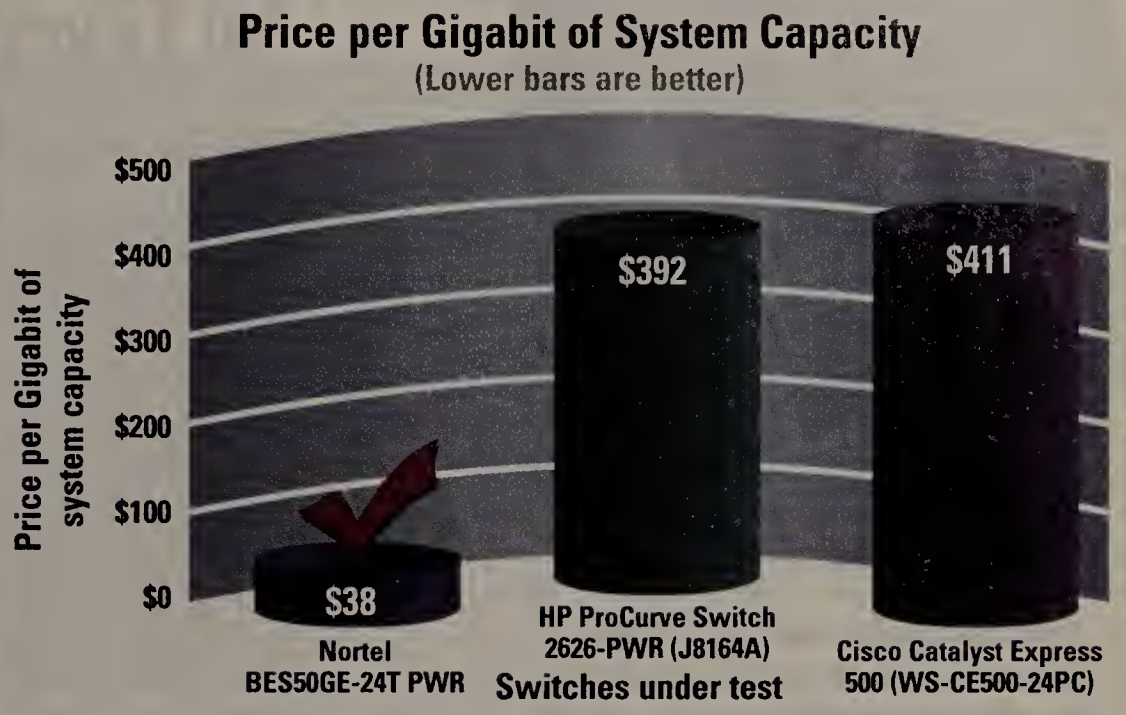
Testing window: **February 2008**

For more info on this test, visit:

- ***http://www.QLogic.com/tolly***

Nortel SMB switches demo performance, offer cost advantages over rival products

- BES50GE-24T PWR costs less than Cisco/HP offerings tested when measured on a per-port or a per-system capacity basis
- BES50GE-24T PWR offers SMBs key functions such as QoS, VLANs, ACLs and PoE
- BES50GE-24T PWR exceeds rival products tested in terms of lower power consumption and noise level
- BES Switch Series models tested delivered wire-speed throughput across all ports and introduced very low levels of latency
- BES Switch Series models tested achieved 100% of VoIP call competion with excellent quality voice scores



Note: Devices offered different numbers and types of ports. This calculation provides a direct comparison of system throughput capacity vs. cost. Based on U.S. dollar retail price without service contracts.

Two tests focusing on switching products for SMBs reveal that Nortel's Business Ethernet Switch (BES) family is a price/performance leader over switches from Cisco and HP ProCurve.

A February 2008 Tolly Group report finds that the Nortel BES50GE-24T PWR, a Gigabit Ethernet LAN switch that delivers Power over Ethernet (PoE), offers a better combination of high-speed data transfer and power delivery than the Cisco and HP switches tested and it costs significantly less than the rival products.

Buyers of the Cisco Catalyst Express 500 and HP ProCurve 2626-PWR solutions pay $411 and $392, respectively, per Gigabit of system capacity, whereas Nortel's BES50GE delivers that capacity at a cost of $38 — up to 11X less per Gigabit.

If users instead look at just a raw "per-port" price comparison where price is divided by port count, the Nortel cost of $38 compares favorably against $70 and $66 for older Fast Ethemet technology from Cisco and HP.

Engineers also conducted power consumption and noise (Sound Pressure Level) tests. Results show that the Nortel BES50GE-24T consumes less power and generates less noise than the HP switch, and matches the Cisco switch.

View the full white paper at:
http://www.tolly.com/DocDetail.aspx?DocNumber=208271

A September 2007 Tolly Group test on the BES 50/100/200/1000 models shows that the Nortel switches achieve wire-speed performance over all ports using standard Ethemet frame sizes and port-to-port forwarding. In addition, the switches introduce very low latency and complete 100% of voice over IP (VoIP) calls with excellent voice quality.

From a pure performance standpoint, the Nortel BES200 switch demonstrated 8 Gbps of bidirectional stack throughput (16 Gbps of total switching capacity) using eight 10/100/1000 Base-T uplink ports, and eight 10/100/100 Base-T stacking ports on a four-switch stack. This provides an easy-to-manage, scalable switch stack with up to eight 10/100/1000 Base-T uplink ports, 192 10/100 Base-T ports, and up to 96 dedicated PoE capable ports to anchor SMB networks as they evolve.

All the BES switches tested also exhibited low standard deviation of latency — less than 10 microseconds (μsec) — for the standard Ethernet frame sizes tested, implying that the switches provide predictable performance required for converged applications like VoIP.

The BES switches also demonstrated support for "toll-quality" voice and 100% call completion rate while handling 100 VoIP calls. The mixture of line-rate throughput, low standard deviation of latency and support for VoIP traffic shows that the BES switches are very capable of anchoring SMB-class networks.

View the full white paper at:
http://www.tolly.com/DocDetail.aspx?DocNumber=207246

Sponsor: **Nortel**

Product class: **SMB-class Ethernet switch**

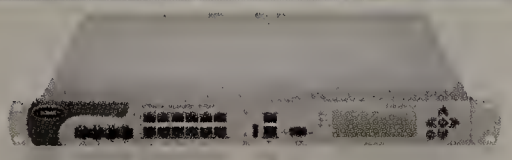
Testing window: **August 2007 to January 2008**

Sponsor: Radware
Document number: 208285
Product class:
- Application-aware switch

Products under test:
- Radware OnDemand Switch 2 AppDirector v1.06
- Radware OnDemand Switch 1, AppDirector v1.06
- BIG-IP 6800: 9.4.2 Build 228.18 Final
- BIG-IP 6400: 9.4.2 Build 228.18 Final
- BIG-IP 1500: BIG-IP 9.0.4 Build 118.5

Testing window: March 2008

For more info on this test, visit:
- *http://www.radware.com*

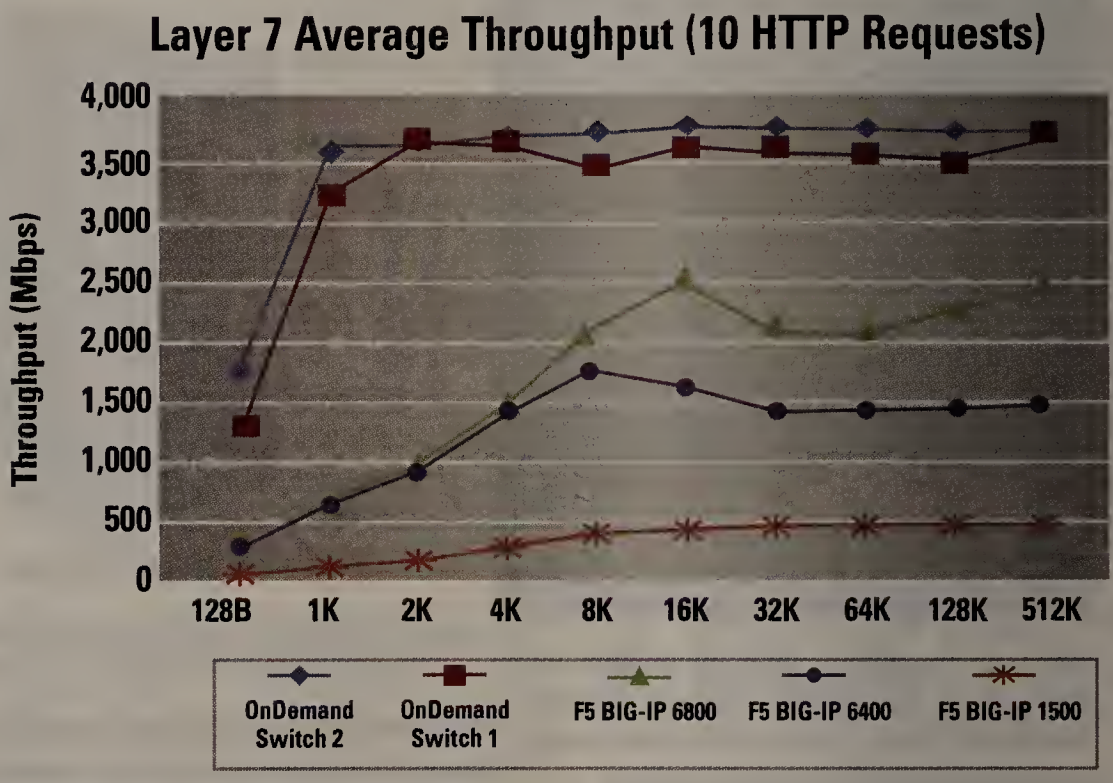


Radware OnDemand Switches outperform F5 Networks platforms in Layer 7 and security tests

Radware commissioned The Tolly Group to evaluate its OnDemand Switch product line, an application-aware platform targeting next-generation application requirements for enterprise and service provider customers. The new product line offers scalable throughput of more than 3.7 Gbps.

Tests show that the OnDemand Switch 2 routinely outperforms the BIG-IP 6800 and smaller models, during both Layer 7 performance and security tests. Engineers measured the Layer 7 performance of all devices tested sending a single HTTP request per connection and 10 HTTP requests per connection for various object sizes.

The OnDemand Switch 2 handled 348,096 transactions per second (tps), for an average throughput of 1.76 Gbps and average response time of 0.032 milliseconds (msec) when handling 128-byte objects and 10 HTTP requests per connection. At larger packet sizes of 4-KB, the OnDemand Switch 2 achieved throughput of 3.72 Gbps and processed 99,491 transactions with an average response time of 1.65 msec.



By contrast, F5's BIG-IP 6800 was only able to attain 283 Mbps of throughput and process 53,953 tps with a response time of 3.88 ms when handling 128-byte packets and 10 HTTP requests per connection. That represents 6X less throughput compared to the OnDemand Switch 2 for 6.5X fewer transactions served. At larger packet sizes of 4 KB, the F5 platform achieved a throughput of 1.47 Gbps and processed 38,766 transactions with an average response time of 5.88 ms, more than 3X slower than the Radware switches.

From a security standpoint, the OnDemand Switch 2 under a DDoS event of 10,000 unique attackers mitigated 783,000 ICMP attack packets with a response time of 4.01 ms while holding a sustained throughput of 1 Gbps. The BIG-IP 6800, by contrast, managed to handle only a maximum of 400,000 ICMP attack packets with a response time of 23.46 ms, 6X slower than the OnDemand switches.

The same advantage held true in a simulated DDoS SYN attack scenario. The OnDemand Switch 2 with a baseline of 1 Gbps handled a maximum of 500,000 SYN attack packets. The BIG-IP 6800 under the same conditions managed to handle only 300,000 SYN packets.

- **Exhibits over 348K Layer 7 tps — more than 5X the transactions handled by F5's BIG-IP 6800 platform when handling 128-byte objects**
- **Delivers over 3.5 Gbps of throughput when handling 10 HTTP transactions per connection and object sizes of 1-KB to 512-KB, while F5's platforms reach a maximum throughput of 2.47 Gbps**
- **Exhibits an average of 6X better response time than F5's BIG-IP 6800 for most object sizes and 120X for 128-byte objects**
- **Combats ICMP and SYN attacks by sustaining 1 Gbps of throughput with no performance degradation while processing up to 49% more attack packets than BIG-IP devices tested, which degraded at lower thresholds**

View the full report at:
http://www.tolly.com/DocDetail.aspx?DocNumber=208285

TOLLY

Tests highlight security prowess of NetClarity EasyNAC appliances

- Protects networks with sophisticated features including client-less network admission control (EasyNAC)
- Delivers MITRE CVE™ certified, compliance-driven, proactive vulnerability management using hardened appliances
- Generates vulnerability management and regulatory compliance reports in PDF, CSV, HTML, SYSLOG and XML formats
- Offers simplified workflow, policy and remediation tools with user level access control
- Provides dynamic, user-controlled alerts on trusted and untrusted network assets using E-mail, SMS cell phone paging and SNMP traps

NetClarity EasyNAC Enterprise, EasyNAC Branch and Endpoint Defender Salient Feature Summary

Feature	EasyNAC Enterprise	EasyNAC Branch	Endpoint Defender
Asset discovery and classification	✔	✔	N/A
Asset inventory monitoring and alerts	✔	✔	N/A
"On demand" and "scheduled" asset audits across multiple IP subnetworks	✔	✔	N/A
Regulatory compliance reports (in PDF, CSV, XML, HTML, SYSLOG formats)	✔	✔	N/A
Dynamic endpoint quarantine using firewall and smart switch integration (when using supported firewall/smart switch hardware)	✔	✔	N/A
Automatic Vulnerability Signatures and/or Software Updates	✔	✔	✔
PCI Security Standards Council-approved scanning equipment	✔	✔	N/A
Real-time protection against malware, trojans, viruses etc.	N/A	N/A	✔
Real-time "anomaly-based" detection and protection against zero-day attacks	N/A	N/A	✔

NetClarity Inc. commissioned The Tolly Group to evaluate its EasyNAC Enterprise™, EasyNAC Branch™ appliances and Endpoint Defender™ software in terms of security vulnerability management, Network Admission Control (NAC) and endpoint security features.

Tolly Group engineers examined NetClarity's EasyNAC Enterprise and EasyNAC Branch vulnerability management appliances and Endpoint Defender endpoint security solution and determined that it delivers effective security through proactively discovering and managing common vulnerabilities and exposures (CVEs), and providing network admission control, remediation workflow and regulatory compliance audit tools in an easy to deploy and easy to manage solution.

EasyNAC Enterprise appliance was configured to audit network assets to identify CVEs, quarantine untrusted or malicious assets, and provided remediation and workflow scheduling tools.

The Tolly Group's hands-on examination found that the EasyNAC Branch appliance provided the same functionality in a smaller appliance for branch office networks. It was also tested for remote monitoring using the same management interface as the EasyNAC Enterprise, allowing for correlation of audit data across the whole network.

Both EasyNAC products were verified for their support of popular firewalls from Juniper NetScreen, Secure Computing, Checkpoint Technologies, and Cisco Systems.

Endpoint Defender software running on endpoints was tested to provide real-time Host-based Intrusion Prevention (HIPS) against common viruses and trojans such as Bugbear, Sasser, Keylogger and zero-day attacks. Engineers also verified that the Endpoint Defender software guards against data leakage related to removable storage media, including USB, floppy, CD and DVD-based media.

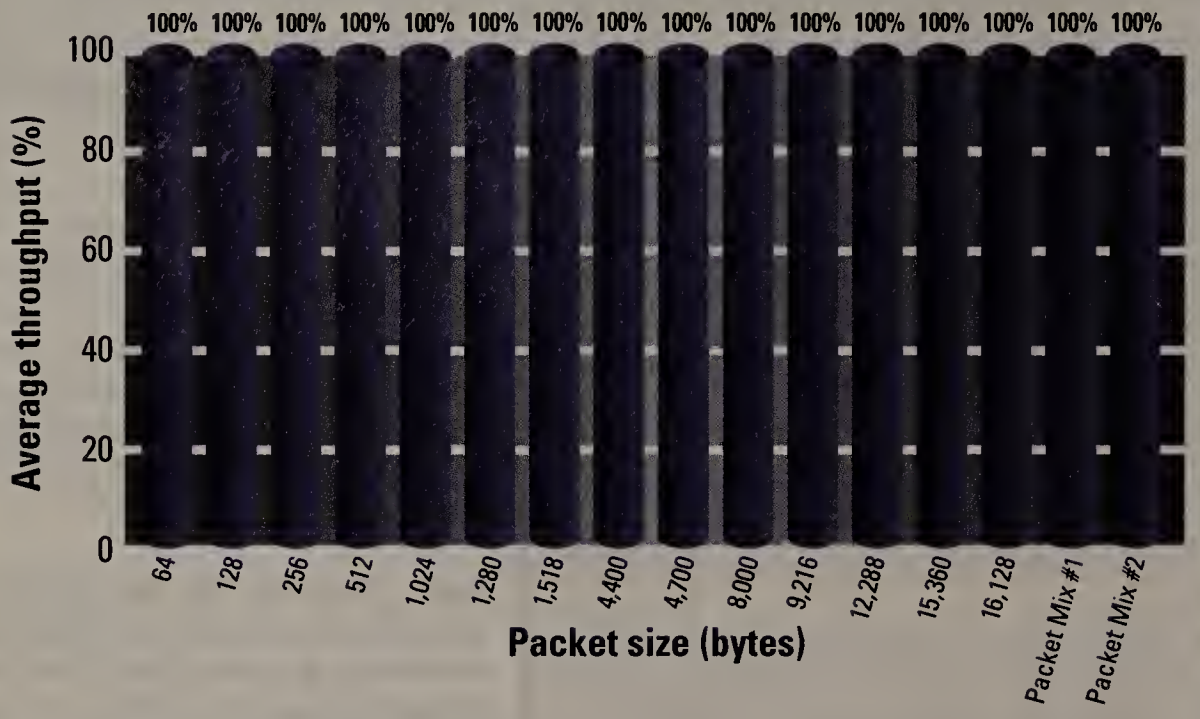
Finally, tests show that the software consumes few system resources when idle and even during an attack. And it could not be disabled or bypassed by killing the Endpoint Defender process while the OS is running, thus providing continuous protection against attacks.

For more info on this test, visit:
http://www.tolly.com/DocDetail.aspx?DocNumber=208294

Sponsor: **NetClarity, Inc.**
Document number: **208294**
Product class: **Vulnerability Management Appliance, Intrusion Prevention System**
Products under test:
- **EasyNAC Enterprise**
- **EasyNAC Branch**
- **Endpoint Defender**

Testing window: **January 2007**
For more info on this test, visit:
- ***http://www.netclarity.net***

Fujitsu XG2000 switch attains 10GbE throughput, ultra-low latency in performance tests



- Achieves 100% of line-rate zero-loss 10GbE throughput when tested across 20 full-mesh ports, when handling frame sizes ranging from 64 bytes to 16,128 bytes
- Drops zero frames when sustaining 100% zero-loss line rate across 20 10GbE ports when tested with multiple packet sizes in a full mesh configuration
- Demonstrates ultra-low latency, just 339 ~ 363 nanoseconds (XFP transceiver latency included) across frame sizes ranging from 64 bytes to 16,128 bytes at 100% load in a full snake configuration

A recent Tolly Group test found that Fujitsu's XG2000 20-port 10 Gigabit Ethernet (10GbE) switch combines ultra-low latency with high 10GbE performance to link directly to 10GbE-capable servers as a high-speed interconnect.

The hands-on test, commissioned by Fujitsu, also found that the XG2000 delivers the ultra low-latency needed for high performance cluster computing — traditionally the domain of Infiniband and other proprietary technologies.

By offering ultra-low latency in an Ethernet switch, the same personnel that run the existing Ethernet network can extend those skills to support 10GbE without additional investment or training that may be required for "non-traditional" technologies, such as Infiniband.

In Layer 2 forwarding performance tests, the XG2000 achieved line-rate zero-loss throughput for all 14 frame sizes tested — ranging from 64 bytes to 16,128 bytes. Line-rate performance was realized for both a 10GbE, 20-port full-mesh scenario, and a 20-port snake configuration. Even when handling an Internet traffic mix (64, 78, 576 and 1,500 bytes), the XG2000 achieved line-rate throughput. Out of 6,067,080,940 frames of Internet-mix traffic transmitted, the XG2000 did not drop a single frame.

From a frame forwarding perspective, the XG2000 forwarded the theoretical maximum of 14,880,952 64-byte frames per second for each port, 812,743 frames at 1,518-byte frames per second, and 77,407 frames per second when tested with the maximum frame size of 16,128 bytes.

On the latency front, the XG2000 introduced latency ranging from a low of 339 nanoseconds (XFP transceiver latency included) with 16,128-byte frames to 359 nanoseconds with 64-byte frames, or 341 nanoseconds on average across the 14 frame sizes tested. When handling an Internet mix of traffic, latency introduced by the switch was just 363 nanoseconds (XFP transceiver latency included). This proves that XG2000 consistently provides ultra-low latency regardless of the frame size.

View the full test summary at:
http://www.tolly.com/DocDetail.aspx?DocNumber=208281

Sponsor: **Fujitsu Computer Products of America, Inc.**

Product class:

- 10GbE core network, data center switch

Testing window: **July 2007**

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VoIP monitoring tools mature with addition of troubleshooting tools

In a very close race, Touchstone's WinEyeQ edges out the competition

BY ROB SMITHERS, NETWORK WORLD LAB ALLIANCE

The five tools we reviewed dig deep into VoIP networks to root out the causes of problems and provide network administrators with easy-to-understand, graphical displays of VoIP activity.

In past reviews (www.nwdocfinder.com/3921), we focused on the ability of these products to give network administrators insight into their company's VoIP networks. This time around, we wanted these products to help diagnose and repair the VoIP problems they see. Specifically, we looked for proof that they accurately isolate the problematic VoIP calls and allow for proactive management of the VoIP streams.

Products from ClearSight Networks, Codima Technologies, JDS Uniphase (JDSU), WildPackets and Touchstone Technologies were tested by Miercom engineers in their central New Jersey lab. (For a full listing of available VoIP monitoring tools, see our Buyer's Guide at www.nwdocfinder.com/1103.) Testing focused on six categories: setup, configuration and deployment; display and interface; real-time monitoring; diagnostics and troubleshooting; reporting, alerts and triggers; and advanced features.

Some of those advanced features include extensive codec support; Perceptual Evaluation of Speech Quality analysis for testing networks; R-factor correlation; the ability to measure video quality; special provisions for analyzing voice over Wi-Fi; and simultaneous multisegment analysis.

All the products tested support Session Initiation Protocol (SIP) and can be used in multivendor environments. Codima's product did have a tighter integration for monitoring Avaya's VoIP because Codima's first deployments were rooted in Avaya deployments.

They differed primarily in how accurately they assessed the voice quality of degraded calls, how well they provided expert advice — the meaning of the error or logged event, suggestions on how to fix it, and what else to look for in the network related to the problem — and how many VoIP-specific alerts and other criteria they monitored.

Most products could inject or replay traffic. Being able to replay the audio stream and hear for yourself what the suspected bad VoIP call sounded like, offers a reality check to troubleshooting when it's coupled with mean opinion score (MOS) and R-factor scores. (MOS is a voice-quality rating that ranges from 1.0 [worst] to 5.0 [best].) As a side benefit, this feature allows you to apply traffic back on the network for limited stress testing, predeployment-site-survey purposes or other, more involved troubleshooting tests of the underlying network hardware in the converged network.

In general, the products we tested offered more accurate voice-quality measurement than past versions did, made it more possible to drill down and see specific call detail and measurement data while allowing managers to monitor a greater aggregate of trunks or call groups, and included more-advanced troubleshooting abilities and better expert advice on where to look for a fault and how to interpret the alerts or warnings.

However, the products all seemed unable to provide trend-analysis data beyond a week. Most vendors seem to be moving toward integration with third-party trend analysis tools to digest the huge amount of data these VoIP monitoring tolls generate in real time over time.

This one is really almost too close to call, because there is only a .32 difference (on a five-point scale) between the highest- and the lowest-scoring product in this test.

Touchstone's WinEyeQ provides the most accurate VoIP statistics and voice-quality assessment in real time and very narrowly wins our Clear Choice Award. It served up details on just about every converged network problem we threw at it. From SIP proxy-setup problems to underlying network problems, we could easily isolate and see to a gnat's eye-level of engineering detail what the problem was.

ClearSight Distributed offered a very complete, rich set of features for managing networks, VoIP and beyond. It was best at isolating faults in our VoIP network and troubleshooting more than a dozen common converged-network problems.

JDSU's PVA-1000 is a very cost-effective, distributable VoIP analysis and

NETRESULTS

Product	WinEyeQ Professional	ClearSight Analyzer Distributed 6.1.6	PVA-1000
Vendor	Touchstone Technologies www.touchstone-inc.com	ClearSight Networks www.clearsightnet.com	JDS Unisphere www.jdsu.com
Price*	$20,000	$20,000	$8,000
Pros	Highly scalable; effective and detailed interface; very accurate VoIP-quality assessment.	Excellent remote-management ability; intuitive drill-down interface; excellent real-time voice and video monitoring.	Great interfaces and navigability; good alerting capabilities; interoperability with third-party capture agents; strong voice-quality statistics and playback features.
Cons	Online help not context sensitive; no data-post-capture analysis; no expert commentator.	Online help not context sensitive; no expert commentator; unable to set up thresholds for many of the alerts.	No expert commentator; difficult to distribute updates to remote agents (via FTP); real-time graphical display for voice quality limited.
Score	4.05	3.92	3.88

management tool. Strength in protocol analysis and decoding ability, which are where JDSU's roots lie evident. The $8,000 complete package is impressive, with its unlimited-distribution client and ability to put a "click here" interface for desktop users to track bad VoIP calls.

WildPackets' OmniPeek Enterprise went beyond VoIP as well, and included e-mail and instant-messaging-rebuild replay capabilities. It also featured an expert commentator to help troubleshoot problems detected on the VoIP network.

Codima Toolbox's autopopulating graphical interface was the most intuitive. Endpoint IP phones appear as individual icons that allow for easy drill-down for call statistics. We give it outstanding marks for ease of use and its network-autodiscovery capabilities.

Although we encountered an occasional hiccup, a few minor glitches and some petty shortcomings, we by and large were impressed with all five VoIP-analysis tools, and would have no reservations recommending any of them.

Touchstone Technologies is spot-on with VoIP monitoring

The first fundamental requirement of any VoIP analysis and troubleshooting tool is that it report accurate information while monitoring a network. The four basic measurements — voice quality, latency, packet loss and jitter — are key metrics that must be assessed accurately and in real time. The key differentiator in this round of testing was the accuracy of the tools in measuring these four metrics.

The second fundamental requirement of any VoIP analysis and troubleshooting tool is usability. If it is difficult to set up, if the configuration challenges even experienced VoIP engineers, if it cannot be configured to scale with the environment it is designed to monitor, the requirement for accuracy doesn't really matter.

Touchstone's WinEyeQ came out on top in our testing based on how well it nailed these two fundamentals. WinEyeQ has a clean, intuitive interface that is very effective whether it's watching one call or thousands. There are no worries about IT administrators or other computer-savvy operators not being able to deploy and use this product.

As for accuracy, WinEyeQ also provided the most precise voice-quality and network-operations statistics of all the products tested; it came closest in pinpointing actual MOS, R-factor and jitter conditions. WinEyeQ was always within 0.1 of the "actual" MOS rating for voice quality, and within 10% for jitter and latency measurements. It did so on the first attempt, whereas most of the other products required extensive tuning to detect our network's problems accurately. WildPackets' OmniPeek Enterprise was the closest to WinEyeQ's benchmark, coming within 0.2 of the rated MOS expected, but it was not consistently accurate.

Ten of the 24 network-troubleshooting tasks we challenged the vendors to detect and react to depended on measuring voice quality. All of the products tested could detect these problems and were capable of assessing voice quality, but WinEyeQ's greater accuracy in measuring made for more accurate reporting of events, and alarms and fewer false-positive notifications when it assessed the network. This is important not only when it comes to finding problems but also in terms of preventing unnecessary work on the part of a VoIP administrator. If a VoIP analysis tool inaccurately senses a problem — perhaps too much jitter — it can trigger a domino effect of other false alarms. We believe WinEyeQ's spot-on performance has much to do with the fact that it was designed from the ground up as a VoIP analysis and monitoring tool.

Despite its ability to hit even the tiniest VoIP-network detail squarely on the head, when it comes to identifying the problems to which those details correlate, WinEyeQ's interface design is clean and simple. There's some unnecessary glitz, but it provides everything you need to dig into to do packet-level analysis for VoIP and video transmissions in order to isolate, verify and troubleshoot a problem. The interface's efficiency, organizational structure and consistency are a notable improvement from the last time we tested this product.

The product provides significant drill-down capability, letting network administrators precisely locate the sources of VoIP problems and make the adjustments needed to improve or preserve quality. It also provides a call-by-call report card and stream-quality indexes. Together these elements let administrators quickly find poor-quality calls and help explain the reasons behind performance problems. For example, we were able to isolate the one bad call out of a hundred calls placed during one test scenario.

WinEyeQ proved capable of analyzing and providing excellent reporting on as many as 1,000 simultaneous calls, and its alarms were not only accurate but also issued in real time and often more quickly than the alarms provided by some of the other products we tested. It was quickest — its response was almost immediate, for example, in our network-troubleshooting tasks — to detect an unresponsive SIP registration server.

WinEyeQ is available in configurations ranging from carrier-grade, customer-premises distributed systems to stand-alone analysis tools. In this test, we worked with the WinEyeQ Professional version, which can function as a stand-alone analyzer or a distributed probe within an entire VoIP system. We installed it on a span port on a managed switch, a typical installation scenario for a small organization. For larger organizations, Touchstone recommends plugging WinEyeQ into a mirrored port or using a line tap to guarantee perfect measurements and com-

OmniPeek Enterprise 5.0

WildPackets
www.wildpackets.com

$28,500

Good interface-customization capability; extensive plug-ins available for IM and e-mail; full-duplex conversation playback; helpful expert commentator for troubleshooting VoIP networks.

Online help not context sensitive; no granularity for SNMP traps; voluminous reporting could be simplified.

3.88

Codima Toolbox 5.1 with autoVoIP

Codima Technologies
www.codimatech.com

$29,000

Integrated Microsoft Visio network-topology map; expert correlation engine provides troubleshooting guidance; easiest-to-use GUI with autopopulating drill-down icons for IP phones and VoIP connections.

Some interface bugs and glitches encountered; autodiscovery of network devices required, which can limit troubleshooting; troubleshooting-analysis-grid feature not intuitive; call voice-quality assessment off about 0.5 MOS.

3.73

* Vendor-suggested list price $USD based on five-site deployment based on two DS-3 and two T-1 WAN-connected locations with a central site monitor. No limit on number of users or monitored calls, but pricing limited to the necessary components for four distributed probes or agents and one central monitor.

SCORECARD

Action	Setup config & deployment	Real-time monitoring	Diagnostics and troubleshooting	Reporting	Display and interface	Advanced features	Total
Weighting	**20%**	**20%**	**20%**	**20%**	**10%**	**10%**	
Touchstone	**4.6**	**4.2**	**3.8**	**3.5**	**3.9**	**4.4**	**4.05**
ClearSight	**4.3**	**3.3**	**4.0**	**3.5**	**4.5**	**4.5**	**3.92**
JDSU	**4.6**	**3.5**	**3.7**	**3.4**	**4.0**	**4.4**	**3.88**
WildPackets	**4.2**	**3.8**	**4.1**	**3.3**	**4.0**	**4.0**	**3.88**
Codima	**3.9**	**3.2**	**3.8**	**3.5**	**4.0**	**4.5**	**3.73**

Scoring key: 5: Exceptional; **4:** Very good; **3:** Average; **2:** Below average; **1:** Subpar or not available.

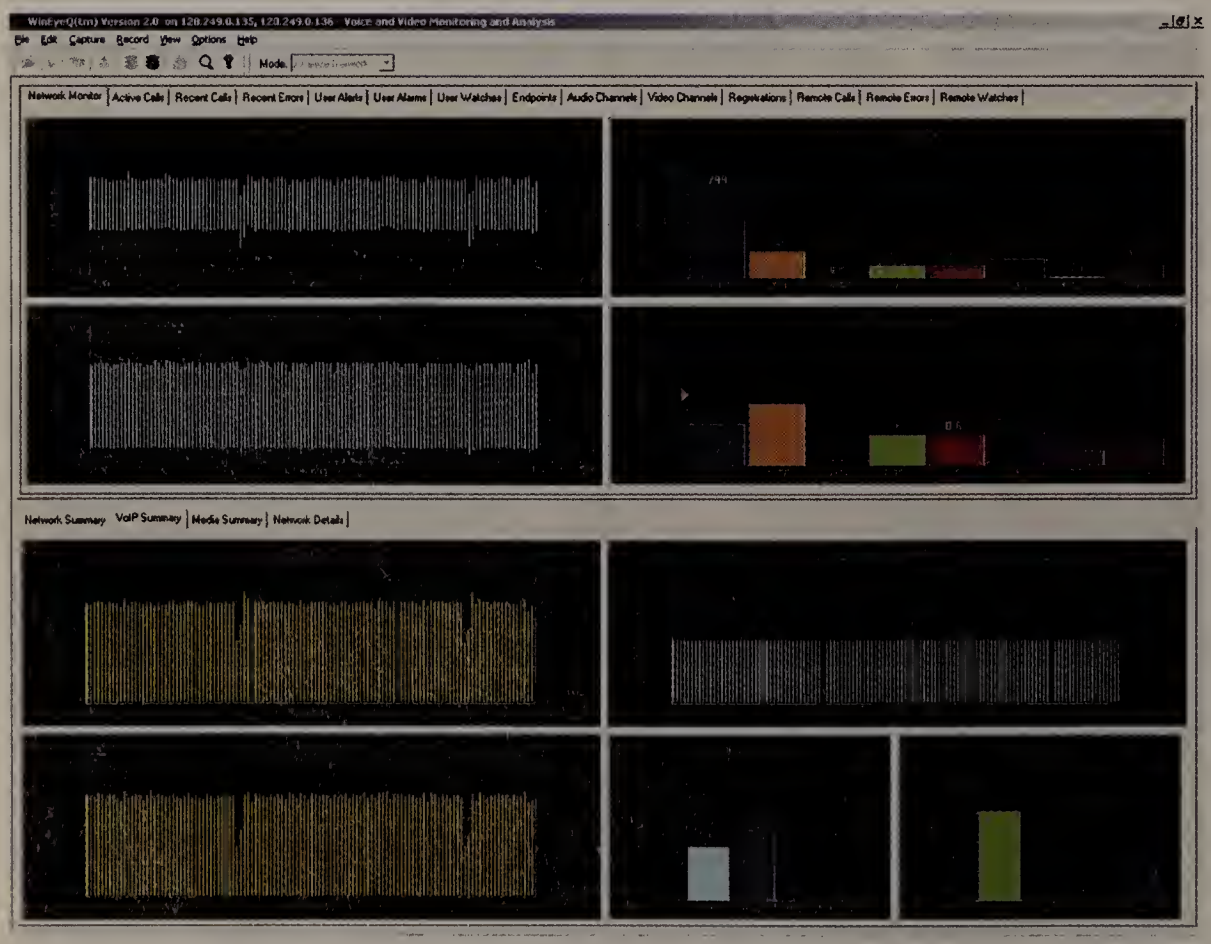
plete fault-tolerance. WinEyeQ also can be deployed in a distributed fashion, and for that the company offers a Web-based GUI and management framework that lets you poll those distributed probes, as well as push out software updates to them.

WinEyeQ provides analysis of standards-based voice and video protocols, including SIP, H.323, Media Gateway Control Protocol (MGCP) and Megaco. It analyzes Real-time Transport Protocol (RTP) audio and video streams, and Real-time Transport Control (RTCP) and RTCP XR calls, regardless of the protocol used to establish the calls. Because the product focuses on VoIP, there is no in-depth analysis of data from other data protocols, unlike most other vendors' wares. It handles about 650 metrics per call, while many other products provide significantly less coverage.

WinEyeQ offers a wide range of preformatted reports, including call, error, watch, session, alert, alarm and endpoint summaries.

WinEyeQ came up short in a couple of areas. It lacked the expert commentator ability that other vendors, such as WildPackets and Codima, provided for their tools. The network conditions for which we were seeking assistance in troubleshooting were detected, but no advice was provided on what we should do or otherwise check to further troubleshoot the problem.

Also, context-sensitive help was lacking, and certain items — such as those in the file menu — were somewhat context sensitive but not in the sense that we expected. However, using the F1 key in some areas sends the user to the correct area in the Help menu.



Touchstone's WinEyeQ analyzer data scope provides a top-down view for detailed VoIP analysis and monitoring, with overall network traffic patterns sorted by protocol, packets and bandwidth. The interface also depicts details about active and passed or failed calls for each VoIP protocol.

ClearSight Analyzer serves up clear view of VoIP activity

ClearSight's Analyzer can be deployed on its own or paired with remote-agent software available in its ClearSight Analyzer Distributed package. We tested ClearSight Analyzer Distributed 6.1.6, which supports most VoIP protocols, including SIP, H.323, Cisco's Skinny Client Control Protocol (SCCP), MGCP, Megaco and Real Time Streaming Protocol (RTSP).

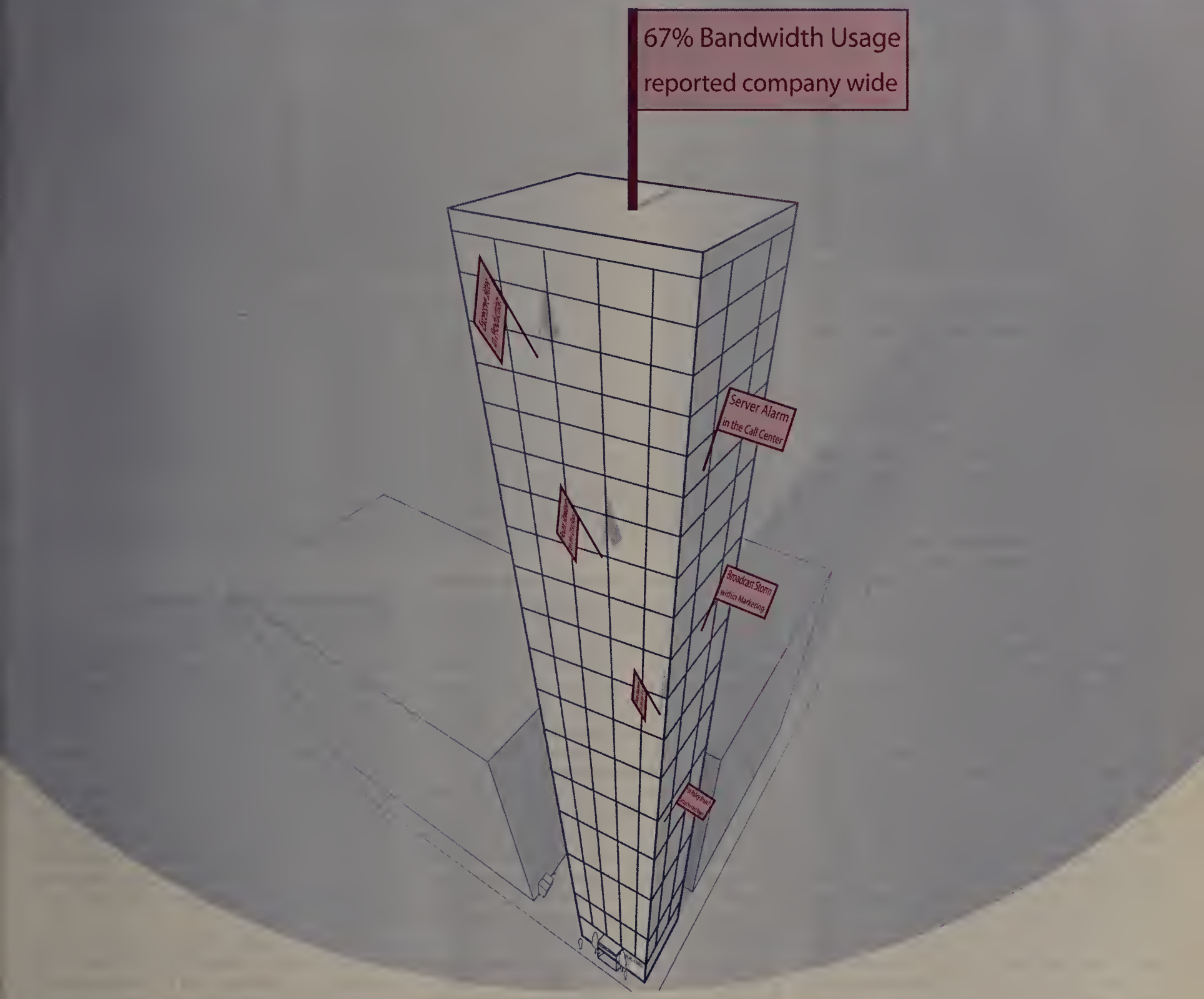
As in the previous incarnations of Analyzer, the latest version stands out for its intuitive and comprehensive display of network activity. Analyzer Distributed offers a multisegment ladder diagram, which gives quick insight into VoIP network activity, illustrating both sides of a call. The ladder diagram also can pull together data collected on different network segments to provide a complete illustration of a voice or data dialog, from the client through the infrastructure to the server and back.

Consistent color codes — red for trouble, yellow for suspected problems, and blue or green for normal conditions — are used throughout. All alerts and thresholds are configurable, but the defaults were effective at identifying what is critical — red — and less severe — yellow. While testing the product's diagnostic capabilities, we observed how problems, such as low-level packet loss and slightly degraded voice-call quality, accurately triggered appropriate warnings (yellow in this case).

Red warnings on the ladder diagram indicated more serious problems, such as an unreachable SIP registrar, which would prevent an IP phone from establishing an initial setup on the network. In addition, severely degraded VoIP calls (to the point we set at 3.0 MOS or lower) triggered severe alarms and necessitated a notation in the events reporting log.

See VoIP, page 40

Top-to-Bottom Reporting



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VoIP
continued from page 38

Analyzer's ability to piece together views of the test network's different segments, clearly show the completed dialog, and isolate a fault in our troubleshooting exercise, contributed to its top diagnostics-and-troubleshooting rating.

We've always liked Analyzer's drill-down capabilities. Users can easily explore from high-level application parameters all the way down to packet decodes. We clicked on a SIP call we were monitoring, and from there burrowed down through statistics screens for the call, including details on quality and call-setup. We even could get to the capture buffer that showed a packet capture trace of the transaction.

The ClearSight tool detects in real time TCP/IP and application anomalies, and offers configurable, periodic (ours was 15 seconds) snapshots of the network. It lets network administrators rapidly determine the sources of problems and make changes without capturing, stopping, recapturing, then recomparing data.

We used the Distributed capture and a transaction-reassembly feature of Analyzer to piece together the clues — a misconfigured Layer 3 switch and an overloaded WAN link — of a compound network anomaly that was impairing voice calls. As many as four flows from different network locations can be merged and displayed together, a feature we found to be helpful for rebuilding conversations and spotting seemingly unrelated activities that don't automatically appear in the flow.

Bottlenecks can be discovered in real time automatically or manually through the use of the network-address-translation wizard. Analyzer employs graphical, Boolean filtering that uses logic and algebraic processes to simplify fault isolation and troubleshooting. This capability is unique, and very helpful in that events could be filtered and alarms triggered using compound expressions for events, rather than being triggered by a single event-threshold setting. For example, we set a compound event to be triggered when calls' voice quality fell below 3.0 MOS but network conditions were good (low latency and low packet loss), to isolate the more difficult problems on the VoIP network that could not be easily explained by poor network conditions.

The tool also provides real-time audio and video playback. Audio can be exported to WAV sound files. Overall, we found that of all the products tested, Analyzer offered the best real-time voice and video monitoring, as well as exemplary post-capture analysis ability.

We also were impressed with the way the Analyzer console upgrades the remote agents when new software is released, and we liked that the ClearSight dashboard can combine trace files from different segments to allow for post-capture combined analysis of as many as four files.

Analyzer has the noteworthy ability to distinguish 39 VoIP-specific events including transactions define in H.323, RTP, SCCP, MGCP, and Megaco, as well as general events such as SIP call setup, SIP call failure, client or server errors, call-setup time, release time, MOS, R-factor, Media Delivery Index (MDI) delay factor, MDI media-loss rate and video quality. During testing, we encountered a problem with Analyzer's ability to report jitter accurately.

We also noticed we were getting some false positives during unimpaired VoIP calls where the MOS and R-factor were abnormally lower than expected. While we found Analyzer's ability to send tests and create actions to be very elegant, we would have liked to see ClearSight make it possible to set up problem thresholds for latency, MOS and R-factor value.

Overall, Analyzer could clearly identify most measurable faults in the network, whether a low MOS score for a call, excessive latency or packet loss. The lack of an expert commentator limited its ability as a troubleshooting tool, however. ClearSight said it plans to include this feature in its next release.

Although reporting of short-term analysis was extensive, long-term (beyond a month) trend analysis currently has to be handled through third-party products. ClearSight has announced that built-in trend-analysis features is on the way.

ClearSight could enhance Analyzer's ease of use by adding help buttons to the sub-interface popup screens and context-sensitive help.

How we did it

Vendors supplied their VoIP analysis and management product on the hardware platform of their choice for hands-on testing in Miercom's lab in New Jersey. The test network consisted of two LAN segments with Cisco Catalyst 3750 10/100/1000 switches. The LANs were interconnected via simulated T-1 and DS-3 WAN links. The WAN simulation was provided by PacketStorm Communications 1800E WAN emulation product.

VoIP calls were generated between the two LAN segments using a WinSIP call generator and snom SIP phones. Our test bed was calibrated using third-party Perceptual Evaluation of Speech Quality instrumentation.

During testing, a mix of calls with G.711 and G.729 codecs was placed between LAN segments. The products were expected to identify the number of calls and discern as much detail as possible about each individual call via a port configured for monitoring the uplink connection to the WAN. Latency, packet loss and jitter were then introduced, and the products had to measure the impairments. We expected that the products would be able to discern the one voice call that was impaired and identify any other problems with the overall VoIP communications.

We tested the tools' ability to detect and troubleshoot two dozen converged network problems. The tests were detecting overall network impairments causing jitter, latency and packet loss both at call-setup time and while calls were in progress; slow SIP server response; duplicate addresses for registration and proxy servers; unresponsive SIP registrar and proxy; Real-time Transport Control Protocol misconfiguration; excessive echo and malformed SIP call-setup messages. Real-time monitoring and alerts about the specific anomalies induced during testing were noted while testing was in progress.

When testing was complete, the products were required to produce automated reports based on the calls and other activities that transpired during the testing. We evaluated these reports' accuracy, clarity and completeness.

JDSU provides flexible, scalable, inexpensive VoIP monitoring

JDSU's PVA-1000 VoIP Capture Agents reside across the network and collect detailed VoIP call statistics for signaling and voice-transport quality. JDSU's unique approach — providing unlimited remote agents at a bargain price of $8,000 to every user on the network — makes this package both flexible and scalable.

JDSU's agents — there even is a version that can be embedded with a user's desktop for use with a softphone — capture bad VoIP calls as they happen. This information is combined with data about network jitter and packet loss and plugged into company's PVA-1000 VoIP Analysis software.

JDSU offers great interoperability — the analysis software works with any agent that uses pcap (a common API for packet-capturing). In other words, you don't need to use a JDSU agent or monitor to capture the traffic you wish to analyze with the PVA-1000.

In testing, it was quite apparent that JDSU's roots are in the protocol-analysis market. Drilling down through the displayed alerts, you quickly land on screens full of the protocol statistics and packet decodes that you would expect to see from a protocol analyzer.

We found the PVA-1000's interfaces and navigability to be extremely effective. The context-sensitive online help was excellent.

Signaling trace diagrams for SIP, MGCP or Network-based Call Signaling (NCS), and

See VoIP, page 42

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SCCP are displayed clearly and in real time on the main interface as specific calls are selected from the continuously updating interface. By clicking on a message in the signaling ladder-diagram, the troubleshooter can obtain full protocol decode for Cisco SCCP, SIP, H.323, MGCP or NCS, Megaco, H.248, and RTP or RTCP.

The PVA-1000 identifies and evaluates every VoIP call by using a capture file, a process that then allows IT personnel to select individual calls for analysis. Each call can be scrutinized for signaling, jitter and packet loss. Additionally, the software can identify the RTP stream without the presence of signaling, if only a portion of a call is available in the capture file. The system works using a round-robin revolving capture-buffer, always capturing, just in case you want to trigger a capture and catch what already happened.

Being able to go into a huge capture buffer — to find the call you are looking for and then decide which component you wish to analyze — is an extremely impressive feature. The product also assists you in finding exactly what you are looking for by providing a link from the GUI to the information that will identity the call to either its actual location on the network or finding a portion of the call within the capture buffer. It's like being able to find a needle in a haystack.

The PVA-1000 nailed all 24 network problems we set out for the test systems to discover. It doesn't provide advice or recommendations on what to do once a fault is identified, however, which competing products do offer.

The PVA-1000 was very accurate in measuring real-time voice quality and network conditions. It was able to isolate and report on specific calls and automatically isolate and report on calls it found with voice quality below acceptable thresholds.

JDSU's product offered great voice-quality statistics, including one the company refers to as "recency," a measure of how close to the end of a call an event came that may have affected voice quality. This metric helps isolate faults in troubleshooting by providing the most relative (by time) network problem as it pertains to the call.

The PVA-1000 provides stereo playback with jitter buffer-emulation that allows replay of entire conversations, not just one side of a conversation, in duplex mode for better troubleshooting analysis. Buffer emulation lets the administrator "experiment" with different jitter buffer settings when replaying traffic, to test and prove configuration modifications on a small scale before applying the changes globally. The PVA-1000 also allows for easy translation of the VoIP capture files, for all or portions of a call, to WAV files for additional troubleshooting ability.

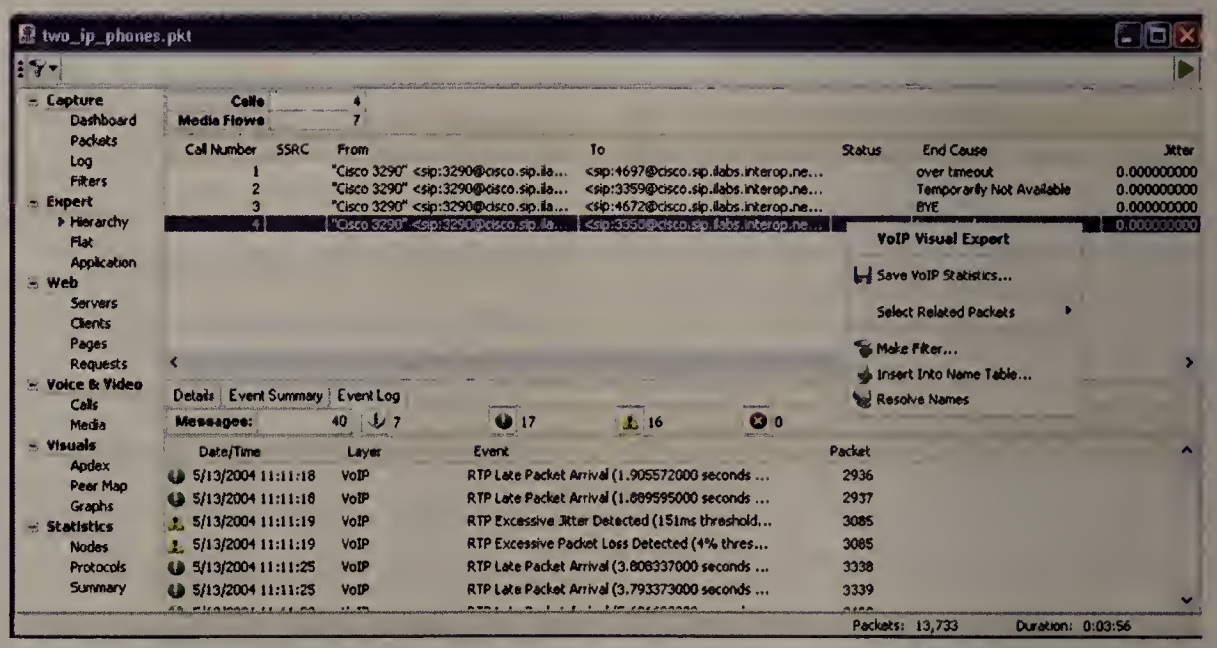
The PVA-1000 can be set to trigger and capture on a MOS threshold, and it will do this monitoring work transparently to the user. It did a good job of issuing alerts in real time when there were problems that needed attention.

The program creates sharp-looking graphical reports and pie and bar charts. Just about any point of interest is extensible and chartable to your liking, and data can be filtered and exported from the tool in a multitude of formats.

The distribution of problems throughout an individual call can be displayed on graphs, and the software provides moving audio-playback indicators that help show how the problems impaired audio quality. Summary-detail reports, fully formatted and ready for printing or saving in a number of formats, can be made for any capture file.

WildPackets offers VoIP tools in the midst of IP network analysis

We tested Version 5.1 of WildPackets' flagship product, the OmniPeek Enterprise with its distributed-data-capture-and-analysis core software called OmniEngine. The enterprise package — which can collect data from an unlimited number of OmniEngines watching various parts of the network — is the only WildPackets distribution that supports VoIP monitoring and analysis.



WildPackets' VoIP Visual Expert interface provides event tracking with links to specific SIP call transactions for quick and effective analysis.

WildPacket's OmniEngine Manager keeps tight remote-control over the distributed OmniEngines and analyzes data from them that has been compressed and encrypted with a proprietary technique before it is sent from the engines to the manager device. Configuring the remote engines — to set up the initial traffic filters and start the analysis for specific protocols or network addresses — was simple.

To avoid sending unnecessarily large files over the network, the OmniManager requests only those portions of the data capture that are really needed for its analysis. In our testing, the network traffic was reduced to less than a tenth of the bandwidth used by other products accessing remote-capture information. Even though analysis does not require a full downloading of remote captures, OmniPeek still allows the operator to download the entire capture-file for data archiving and full offline access to that backed-up data store.

Although the product did a pretty good job analyzing VoIP traffic, it still was obvious to us from the way the GUI was organized that its focus still lies in watching other types of traffic. In a few cases, we had to hunt for the analysis data we were seeking among a seemingly overwhelming interface of other network data.

The Visual Expert interface is part of OmniPeek Enterprise's GUI component, which has an effective "top talkers" display and provides a very effective ladder-diagram of conversation transactions pieced together from multisegment analysis captures. The interface is very customizable compared with similar features in the other products tested.

The ladder diagram depicts the stages of the SIP call-setup, and once the call is connected it superimposes plots of the voice-quality, R-factor and jitter metrics on the screen. We could clearly see when the server was slow to respond to the connection request and see when voice quality degraded because of overloaded network conditions.

The Expert System included in the OmniPeek GUI diagnoses network problems based on 26 VoIP-specific events it uses to trigger alarms. Monitored items include SIP client error, SIP server error, RTP late packet arrival, low-MOS call quality, low R-factor, low conversational quality and many others. The tool was particularly effective in identifying the sources of problems relating to media-analysis and

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voice-quality assessment of calls in progress.

During our testing, OmniPeek did a good job of alerting us to problems, such as VoIP device disconnections. Event notifications and alarms highlighted excessive latency and packet loss when we induced them on the network. However, we encountered a problem during one of the tests when the product could not accurately report the latency (using RTCP information) of the VoIP traffic while connected to a mirrored port on the network. The other tests we conducted ran well, with OmniPeek detecting our battery of network impairments, and induced faults without much difficulty.

OmniPeek's Expert System provided the best troubleshooting advice of the products tested, by clearly explaining the VoIP events and providing additional guidance and suggestions about what to check to correct the problem. Its ability to report on network jitter more accurately than some of the other tools gave it an edge when we used it to troubleshoot and identify degraded conditions in our simulated VoIP network.

OmniPeek can save individual calls as raw packet streams or as WAV files, and we were impressed by its ability to show and replay full-duplex conversation playing both ways simultaneously. This full-duplex monitoring and replay potentially could provide better insight when you're troubleshooting a problem, especially if echo or excessive latency is a factor.

OmniPeek also offered detailed reporting. We generated a 102-page Adobe PDF document about our testing experience, and all pertinent transactions and problems were reported. Its trend analysis left a little to be desired, however. Page count isn't everything. We would prefer more-distilled information.

OmniPeek has one of the most extensive sets of plug-ins of all the products tested. They include a Google Maps plug-in that integrates network-topology maps with an Internet-downloadable map so you can plot sites' locations by IP address; an e-mail and instant-messaging plug-in that allows full-conversation reconstruction of messages "for analysis"; a SQL plug-in that lets you perform sequel queries against captured packets; and SNMP plug-ins for more-extensive SNMP trap management.

WildPackets was the only vendor to include a training video with its product. It was a good source of help, and adds significant value that can reduce the product's TCO and expedite deployment.

Codima homes in on troubleshooting VoIP problems

We tested three tools in Codima Technologies' Toolbox 5.1 set: autoVoIP, which monitors and troubleshoots VoIP networks; Traffic Simulator, which simulates traffic and generates stress tests for VoIP networks; and autoMAP, a network-visualization tool that provides a clear network layout of IP equipment, including IP phones, IP-PBX equipment and SIP servers.

The system came with excellent start-up and installation documents, and very good technical bulletins that showed tips and traps for deploying it. We experienced no significant problems installing the Codima product set, but because the product offers no installation prompts, IT personnel encountering problems are relegated to reading the manual.

The autoMap discovery tool integrates directly with Microsoft Office Visio, which does not come prepackaged by Codima, to provide graphical topology maps and asset reports of the network layout. It has a helpful Historical Change feature that automatically identifies topology changes. AutoMap is an effective tool for network discovery. However, the fact that Codima's VoIP analysis capability relies on the autoVoIP discovery feature may limit troubleshooting in some cases, because it sees only VoIP traffic flowing between discovered devices. For example, we had trouble analyzing our SIP calls emulated by the test and measurement equipment, because the simulated endpoints would not populate in Codima's device map.

The autoVoIP tool uses passive analysis of VoIP traffic flows and provides live views of the activity and related service-level-agreement graphs. Information gathered by autoVoIP centers on data that feeds into QoS parameters, including delay, packet loss and jitter. MOS scores and R-factor values are then calculated automatically based on those parameters. SIP server performance is continuously tracked for response time and error patterns.

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AutoVoIP accurately provided analysis and troubleshooting assistance for most of the 24 network problems and impairments we induced, with the exception of a few tests that depended on very stringent voice-quality thresholds. AutoVoIP could clearly assess voice quality and identify problem calls during the testing, but the accuracy we required for the analysis in the network-problems tests exceeded what we observed the tool could measure, so it did not trigger all the alarms for degraded VoIP call-quality. AutoVoIP's MOS was 0.5 points off what it should have been for the VoIP calls sent over an impaired network when the VoIP traffic did not use RTCP. Codima explained that the discrepancy probably occurred because the product uses RTCP as its first choice to measure QoS, but falls back to RTP analysis when RTCP is not available.

AutoVoIP's grid-style GUI overview, referred to as the Troubleshooting Grid, visually represents the information running across the VoIP network. The simple interface eventually allowed us to reach detailed statistics for specific calls, but only after we had to jump between unlinked areas to get statistics, for example, on network jitter. We are concerned about the scalability of Codima's simplistic front end for very large IP phone deployments, because you would have to scroll down to review thousands of phone icons in a larger network.

We also ran into a few glitches in the interface. For example, the highlighted item on the navigation tree would not remain on the item of interest when selected. It repeatedly jumped back to the script editor, a bug that made it difficult to keep track of our whereabouts. Codima acknowledged this problem and reported that it is addressed in the next software release.

For troubleshooting, autoVoIP reports on 26 VoIP-specific network events and can issue alerts on them all. We found these network events to be accurately triggered, except for the MOS discrepancy previously mentioned.

We liked the way we could see in real time who was calling whom — from the calling-line-ID standpoint. We also give a thumbs-up to the package's Automatic Correlation Engine (ACE), which combines relevant network functions and presents the results for easy problem-solving.

For example, in one of our tests, we caused a slow initiation of a SIP call — an annoying condition in which you pick up the phone and can't dial and connect immediately. The ACE observed and reported this anomaly and made the connection that the condition could be related to the high call-setup volume in progress during this test.

Codima's autoVoIP was smart enough not only to tell us there was a problem, but also, by measuring other criteria intelligently, to suggest what the problem could be. Further, this connection led to suggested remedies, for example, that the server might need additional memory or other resources. Other alerts would produce automatic correlation between VoIP impairment factors, such as excess network packet loss causing a lower voice-quality MOS score. So, Codima gets kudos for providing excellent expert advice for our troubled network.

Reporting is also a strength for Codima — particularly because autoVoIP does trend analysis and did well at mapping and providing a network-overview diagram.

Smithers is CEO of Miercom Consulting and Integration a technology integration and testing firm. He can be reached at rsmithers@miercom.com

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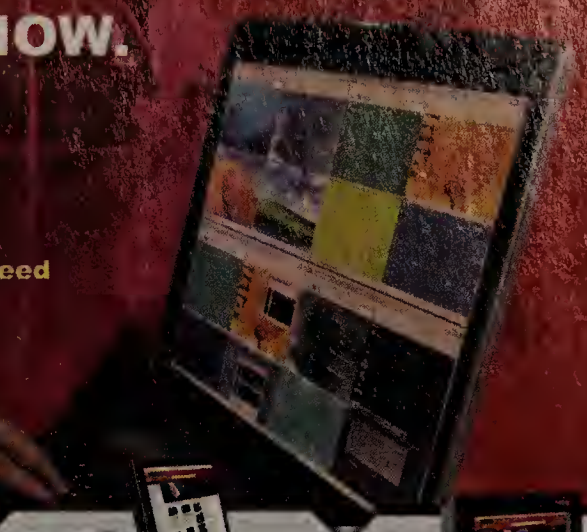

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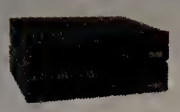

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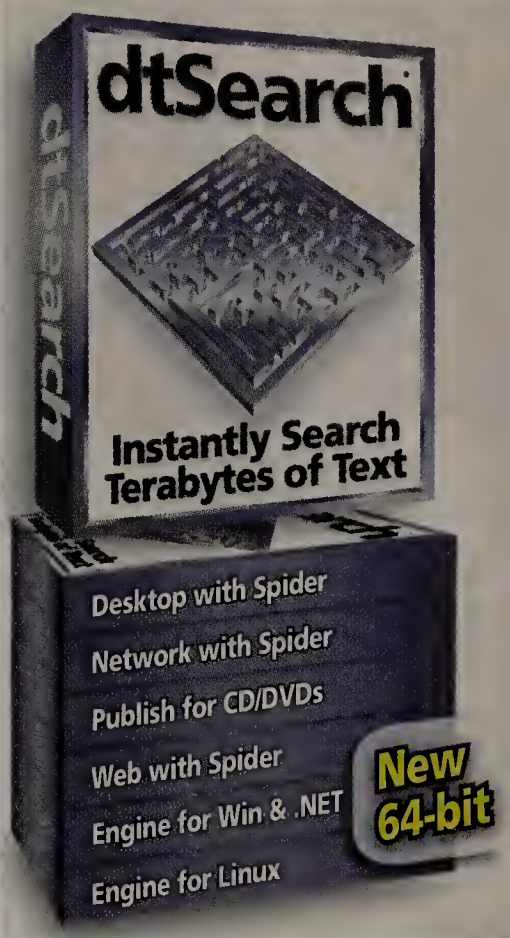

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opportunity with the ASR 1000. "I'll be consolidating multiple 7200s or 7300s into a single ASR chassis" in some larger points of presence, says CTO Jeff Young, whose organization relies on hundreds of the older routers.

With the ASR 1000, Cisco is not only rolling out its next-generation edge router but attacking a sweet spot of Juniper's E-series and Redback Networks' SmartEdge systems, analysts say. While Cisco owned 54% of the $1.3 billion service-provider edge-router market in the third quarter of 2007, and dominates with 84% of the $4.3 billion enterprise router market — according to Dell'Oro figures — Juniper has chipped away steadily (it owned 16% of the carrier edge-router market in the third quarter).

"This is a real blast at some of their competitors," says Deb Mielke, president of Treillage Network Strategies. "Juniper's key strength against Cisco was in the edge. But this baby is hot — smaller, more powerful, does a lot of neat things." Mielke was referring to some of the firewall, deep-packet-inspection and session border control (SBC) capabilities baked into the ASR 1000 that competitors, including Juniper, usually support with additional products or modules.

Juniper's reaction

Juniper CTO and founder Pradeep Sindhu said at his company's analyst conference last week that he is much more comfortable talking about his own company's products than Cisco's, but did offer this general assessment: "In sharp contrast to what Juniper tries to do — which is to have a single operating system, consistent architecture — our competition seems to specialize in producing a new operating system with each product line. And this doesn't serve the customer well." (Read a Q&A with Sindhu at www.nwdocfinder.com/3047.)

There are three models of the ASR 1000: the 1002, which has three port adapter slots; the 1004, with eight slots; and the 1006, with 12. The port adapters include two- and four-port channelized and clear-channel T-3/E-3; four-port serial interface; eight-port channelized T-1/E-1; four- and eight-port 10/100 Ethernet; two-, five-, eight- and 10-port Gigabit Ethernet; one-port 10 Gigabit Ethernet; and two- and four-port OC-3 packet over SONET (PoS), and one-port OC-12 PoS.

The 1002 model has another slot for a 5G to 10Gbps embedded services processor (ESP), as well as an integrate route processor. The 1004 model has separate slots for a 10Gbps ESP and a route processor, and the 1006 model has two 10Gbps ESP slots and two route-processor slots for hardware redundancy.

> "Juniper's key strength against Cisco was in the edge. But this baby is hot — smaller, more powerful, does a lot of neat things"
>
> **Deb Mielke**
> president of Treillage Network Strategies

At 5G to 10Gbps, the ASR 1000 fills a niche between the 1Gbps 7200s and the 15Gbps 7600 series, which is dedicated to Ethernet aggregation. In the enterprise, the ASR 1000 can be used as a headend to aggregate multiple Cisco Integrated Services Routers at branch sites; as an Internet gateway; and as a private WAN using leased lines and dedicated fiber.

In a service-provider environment, the ASR 1000 can function as a broadband-service provisioning vehicle and as customer premises equipment for a managed service offering.

The ESP, which is based on the QuantumFlow processor, lets services, such as network security, deep-packet inspection, firewall, QoS, Network Based Application Recognition, broadband aggregation and SBC, reside in software and not require additional hardware support in the form of a service blade, Cisco says.

Cisco says it spent $100 million to develop QuantumFlow, which is 160 times faster than the processor used in its 7200-series router line. QuantumFlow was developed with technology obtained from Cisco's acquisition of Procket Networks in 2004.

The processor is "just flat-out cool," says Steve Schuchart, an analyst at Current Analysis. "They've hit on reliability, security and speed. They've added services to the router — this is a nice addition to their line."

The ASR 1002 also has an integrated 10Gbps shared-port adapter interface processor, while the 1004 and 1006 models have two and three slots for Session Initiation Protocol modules, respectively.

The ASR 1000 operating system, called IOS XE, is based on IOS images common to the 7200 series routers but is built on a Linux kernel. Cisco says this provides modularity — in which one component of the operating system can be modified without deactivating the entire package — and improved resiliency.

A key feature of IOS XE is its support for dual IOS images running on a single ASR 1002 or 1004 route processor for software redundancy. This dual operation could be used for backup or upgrading to a different release.

The ASR 1006 does not support IOS software redundancy in a single route processor because each of the two hardware redundant route processors support one IOS XE image.

The dual images also provide software virtualization to enable rapid provisioning and simultaneous use of a range of services, including firewall, IPSec VPNs, deep-packet inspection and SBC, Cisco says.

FactSet's Young says he does not foresee any challenges or issues in migrating to IOS XE. But it does require attention. "We're definitely aware of the significant change in architecture," he says. "But we're more excited about the benefits — a lower device count, power and space savings, in-service upgrades — than we are concerned about the differences. There is some additional complexity and new cost for me to endure, by nature of the architecture. I think Cisco has a pretty good track record for getting that kind of stuff right."

Cisco says the Cisco ASR 1000 also lets service providers and enterprises reduce their carbon footprint by consolidating the service of several devices or appliances into a single router. At 1600 watts, Cisco says an ASR 1006 consumes half the wattage of a combined WAN-aggregation router, VPN headend, intrusion-prevention appliance, firewall and IPSec security product, while offering 10 times the performance.

In a 20-router deployment, the ASR 1006 can generate $170,000 in power cost-savings over five years compared with the router-headend-appliance-firewall combination, Cisco says.

The ASR 1000 series is expected to be generally available in April in 2U, 4U and 6U sizes, with prices starting at $35,000.

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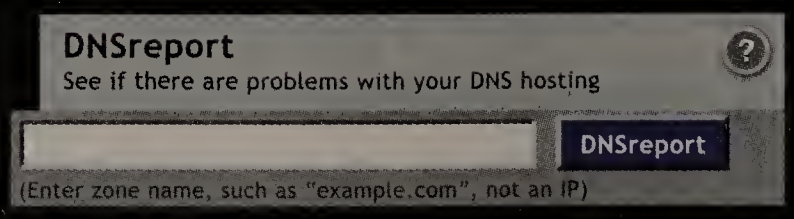

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BACKSPIN

Mark Gibbs

Military insecurity

The Internet is just shy of its 20th commercial birthday. Given that, and the fact that the Internet is based on technologies that are open, well documented and well understood, you'd think all serious enterprises that connect their e-mail systems to the Internet would be capable of ensuring their security and protecting their assets.

When I write "serious enterprises" I'm thinking about really big ones like, oh, say, the United States Air Force. The USAF is responsible for the safety of millions of people, including the president when he's jetting around on Air Force One, and has a budget of billions of dollars to do the job.

The following might seem like a bit of a digression, but stick with me, we'll join up the bits in a moment.

There is a town over in Jolly Old England called Mildenhall in the county of Suffolk where once upon a time (March 1997) a gentleman by the name of Gary Sinnott decided his town needed a Web site.

Sinnott created a nice site that included local news, pictures of the town, the area's history and so on. All was well in this Webified corner of that green and pleasant land until around 2000 when milden hall.com started getting a lot of incorrectly addressed e-mail.

If you take the A101 north out of Mildenhall and drive for roughly 5 kilometers (they are, after all, Europeans) you will arrive at the gates of Mildenhall Air Force Base which is shared by both the United Kingdom (it's actually RAF Mildenhall) and the USAF.

Now, when you connect naïve users to the Internet and let them use e-mail, what mistake do they pretty much always make? Yep, they assume every destination is in the .com domain. Thus it was that people both inside and outside the military started sending messages to mildenhall.com rather than mildenhall.af.mil.

Two problems came of this. First, the sheer volume of e-mail overwhelmed Sinnott and his server, and second, much of the content was nothing he ever wanted to see. This included (these are Sinnott's words): "Spam. Loads of it! Military data — some very interesting personal information — some very personal. Some of the worst multimedia clips I've ever seen or heard. [And] interesting insights into what some Americans consider to be pornographic."

But the most interesting stuff in this motley collection was military data, which included — and I am not making this up — classified battlefield strategies as well as the flight plans for Air Force One!

When Sinnott told the U.S. military about the misaddressed messages back in the early "oughts," they were somewhat disinterested and carried on being disinterested for several years. According to *The Register* (www.nwdocfinder.com/3045), "Officials advised Sinnott to block unrecognizable addresses from his domain and set up an auto-reply reminding people of the address for the official air force base." This, of course, would not solve either Mr. Sinnott's problems or those of the military.

Eventually Sinnott did follow one piece of the USAF's otherwise rather useless advice — "Get rid of the domain." Sinnott killed off his Web site (you can see his final posting via the Wayback Machine).

This was a spectacular example of incompetence and complacency on the part of U.S. military security and all the more worrying considering the amount of money and effort we're told is being put into national defense. I wonder how many more years will have to pass before military security is at least as good as the average enterprise?

Gibbs is secure in Ventura, Calif. Lock down your response at backspin@gibbs.com.

NETBUZZ

News, Insights, oddities

Paul McNamara

In defense of Caller-ID spoofing

It's not me mounting the defense, mind you. However, I thought it worth noting that a pair of recent columns — "Confessions of a Caller-ID spoofer" and "Caller-ID spoofing burns fire equipment company" — generated significant reader reaction, not all of it in lockstep condemnation of the practice.

Turns out that Caller-ID spoofing has fans ... and not only among the criminal, unscrupulous and desperate: For example, you're about to read pleas for understanding from an engineer who works for an IP PBX manufacturer, as well as a dutiful father (his is priceless).

For those who missed the initial items, the first post concerned the tale of a telecom industry veteran who used a Caller-ID spoofing service — over and over again — to break through the voice mail of a former employer he says owed him thousands in unpaid commissions, while the second involved a small Maine company that was put out of business for more than 24 hours by a spoofing-enabled credit con.

First we'll hear from Jeff Rowley, an engineer at ShoreTel:

"Two beneficial uses of Caller-ID spoofing that we implement in the ShoreTel IP-PBX include being able to send a remote-based softphone user's home telephone number when they call 911 out a corporate trunk and, second, sending the Caller ID of the original caller when using our Find Me/Follow Me feature.

The first feature allows a home-based IP call-center agent to place outbound calls from their PC-based IP softphone and the IP-PBX system sends their corporate caller ID out the corporate PRI. But when they call 911 we can send their home telephone number instead, directing the emergency response team to the correct [home] address.

The second feature enhances our Find Me/Follow Me feature. This feature allows a caller to 'press 1 to have the system find me.' While the caller is waiting the system places outbound calls to the user's cell phone (or home phone) but sends the original caller's Caller-ID so the recipient knows who the call is really from, rather than just another call from the corporate office.

These beneficial features are not possible if the carrier filters out Caller-IDs that are outside of the "proper range" of DIDs.

I asked Rowley a few questions:

What about end-user control? Is there any and could it be abused?

In our system all three of the examples I mentioned are set by the administrator — not by the end user. Still could be abused but it would have to be a company-wide plot.

How does society allow the good while eliminating the abuses?

Tough one, as is all choices between security, privacy, freedom, convenience and the like. I would equate it to allowing a consumer to being able to host their own SMTP mail server. The ISP allows this unless there is abuse (the server turns into a spam-monger) and then Port 25 gets turned off for that connection.... Similarly Caller-ID spoofing shouldn't be automatically assumed to be bad or abusive but looked at more in an "abuse it and you lose it" fashion.

Now we get to that dutiful Dad, one Mitch Crane from Bethlehem, Ga., who writes:

"I have to confess, I, too, am a Caller-ID spoofer. You see, I have two teenage daughters who have uncanny luck with their phone service: It goes out when they don't want to hear from a parent. I just randomly pick one of their friends' numbers, spoof it and I miraculously get through.... I'm sure they too think the practice is evil and should be outlawed."

Wonder how many times you'd have to do that before the kids would just give up and answer when mom or dad calls.

No hiding here. The address is buzz@nww.com.

How to Protect and Improve System Performance

The Top Ten Points to Know about Fragmentation

IT professionals are heroes of the workplace. Whether with cunning wit or a Phillip's head screwdriver, they solve most any computer emergency. However, keeping a computer running at top speed is usually preventative maintenance instead of last-minute, adrenaline-surging, virus-vaccinating heroics.

Here are 10 key points to maintain peak performance across any network:

1. The hard-disk is the slowest part of any system.

Say you are operating a 2.5 GHz processor. That's 2.5 billion operations every second.

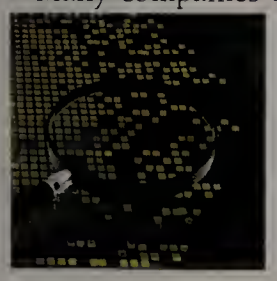
A large number of hard disks only spin at 7200 rotations per minute, or 120 cycles per second, or 120 Hz. This means your CPU is more than 20 million times faster than the hard disk. The hard disk still has mechanical components. Think *Terminator 2*®, when a mechanized Schwarzenegger is outclassed by the faster, smarter T-1000. When the slowest part of your computer is making unnecessary reads, the entire system is dragged down.

2. Fragmentation has severe effects.

It's more than sluggish and crawling computer speeds; fragmentation leads to crashes, hangs, data errors, file corruption and boot-time failures. Files that suffer fragmentation are more difficult and take longer to back up. When systems are thoroughly defragmented, they run faster and more reliably—period.

3. Real-time defragmentation is necessary.

Many companies rely on 24/7, mission-critical servers. Taking these systems offline for maintenance is not an option. But, having a server with I/O bottlenecks is also not an option. Only real-time, invisible defragmentation fixes this catch-22 situation.

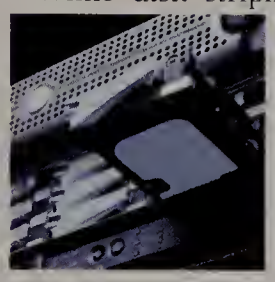


4. Give your systems faster-than-new speeds.

NTFS best-fit attempts for file placement on hard drives are limited. Diskeeper® 2008 comes with a new technology called I-FAAST™ (Intelligent File Access Acceleration Sequencing Technology)[1] that re-sequences your files. So, in addition to consolidating free space, defragmenting with Diskeeper boosts access to your most frequently used files by as much as 80%. I-FAAST gives systems faster-than-new speeds.

5. Servers are especially susceptible.

While disk striping improves physical I/O capacity and performance, RAID and SAN systems simply do not fix fragmentation where it begins—at the file system. Enormous volumes with heavy read/write activity lead to astronomical fragmentation rates, making RAID and SAN work harder than they should. The efficiency of RAID and SAN may lessen some of the physical effects of fragmentation, but fragmentation is never eliminated. You'll need to buy more and more equipment to compensate. Sooner or later, the tortoise catches the hare, and your system suffers I/O bottlenecks and slow server speeds.



6. Operate without interrupting productivity.

The new InvisiTasking™ technology makes software transparent. Diskeeper 2008 with InvisiTasking will work invisibly in the background; only using untapped resources. Systems are continually improved without any management or impact on a system's usability.

7. Defragment despite minimal free space.

The purpose of defragmentation is to restore lost speed and performance. A defrag engine must be able to operate in limited free space, because drives with extremely limited free space are the ones in need of the most help. Diskeeper 2008 handles millions of fragments and can function with as little as 1% free space.

8. Stop fragmentation before it happens.

Diskeeper 2008 comes with Frag Shield™ 2.0, a technology that automatically defends against fragmentation of critical system files. Frag Shield 2.0 prevents crash-inducing fragmentation. It's like Superman® saving the day—two days before there's a problem.

9. Auto-defrag breathes life into systems.

It keeps systems at optimum speeds and eliminates fragmentation-related performance issues. Thoroughly defragging systems adds 2–3 years onto the hardware's useful life.[2]

10. Analyze your network's performance.

Poor performance on a remote system can easily be mistaken for a slow network. Get Disk Performance Analyzer for Networks™. This free utility scans networked systems for fragmentation. See for yourself how fragmentation is affecting your systems. This groundbreaking program will provide comprehensive reports on how system speeds will improve with thorough defragmentation. Visit www.diskeeper.com/nw11 and get this free, must-have utility.

Diskeeper 2008 is the only fully-automated defragmentation program. It operates invisibly in the background and it dynamically adapts defragmentation strategies to fit the needs of individual volumes. With new defrag engines, Diskeeper 2008 restores performance on volumes with as little as 1% free space. Get rid of slows, bottlenecks, and fragmentation-induced crashes. Visit www.diskeeper.com/nw9

When systems are thoroughly defragmented, they run faster and more reliably—period.

[1] Available on Pro Premier, Server and EnterpriseServer editions.
[2] See white paper at www.diskeeper.com/nwpaper1

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